

THE TRANSFORMATION OF THE FLEET HOSPITAL PROGRAM  
FROM A PLATFORM-BASED HOSPITAL TO A MODULAR,  
CAPABILITY-BASED HOSPITAL

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General Studies

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## ABSTRACT

THE TRANSFORMATION OF THE FLEET HOSPITAL PROGRAM FROM A PLATFORM-BASED HOSPITAL TO A MODULAR, CAPABILITY-BASED HOSPITAL, by LCDR Brian E. Loefstedt, pages.

The United States has entered a new security environment, causing its military to conduct operations in remote areas of the world with limited resources to support its troops. The Fleet Hospital Program is responsible for providing health service support ashore, mainly medical and surgical capabilities to Navy and Marine Corps personnel during intense combat operations. The requirement for forces to be lighter, more maneuverable, and more readily deployed and employed in the 2001 *Quadrennial Defense Review* has created the need for change in this program.

This study answers the question: Should the Navy Fleet Hospital Program transform from a platform-based hospital to a modular, capabilities-based hospital? It utilizes five future mission scenarios for deployable medical systems to evaluate the applicability of a capabilities-based fleet hospital to perform those missions. The study leads to the conclusion that in order to remain a relevant deployable medical asset, the current fleet hospitals require reconfiguration to capabilities-based hospitals to meet the operational needs of the war fighter. The current fleet hospitals are simply too large and cumbersome to provide a flexible, modular, and maneuverable medical facility necessary to operate in today's security environment.

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## ACRONYMS

ABFC	Advance Base Functional Component
AO	Area of Operations
ATF	Amphibious Task Force
BOS	Base Operating Support
BUMED	Bureau of Medicine and Surgery
C2	Command and Control
CBTZ	Combat Zone
CESE	Civil Engineering Support Equipment
CNA	Center for Naval Analysis
COMMZ	Communication Zone
CONUS	Continental United States
CSH	Combat Support Hospital
DGDP	Directorate of Graduate Degree Programs
DMSB	Department of Defense Medical Standards Board
DOD	Department of Defense
DON	Department of the Navy
EMEDS	Expeditionary Medical System
EMF	Expeditionary Medical Facility
EMU	Expeditionary Medical Unit
EMW	Expeditionary Maneuver Warfare
FHOTC	Fleet Hospital Operations and Training Center
FHSO	Fleet Hospital Support Office
FRSS	Forward Resuscitative Surgical System



FSSG	Forward Supply and Service Group
GDP	Graduate Degree Programs
GWOT	Global War on Terrorism
HEPA	High Efficiency Particulate Air
HSV	High Speed Vessel
HVAC	Heating, Ventilation and Air Conditioning
ICU	Intensive Care Unit
ILO	Integrated Logistics Overhaul
ISO	International Standardization Organization
ISR	Intelligence, Surveillance, and Reconnaissance
JRCAB	Joint Readiness Clinical Advisory Board
MAGTAF	Marine Air Ground Task Force
MCRP	Marine Corps Reference Publication
MEB	Marine Expeditionary Brigade
MOOTW	Military Operations Other Than War
MPF	Maritime Pre-positioning Force
MTF	Medical Treatment Facility
MTW	Major Theater War
NEMSS	Naval Expeditionary Medical Support System
NEO	Noncombatant Evacuation Operation
NMCB	Naval Mobile Construction Battalion
NTTP	Naval Tactics, Techniques, and Procedures
NWDC	Naval Warfare Development Command
ODS	Operation Desert Shield
OEF	Operation Enduring Freedom

OIF	Operation Iraqi Freedom
OMFTS	Operational Maneuver From the Sea
OPNAV	Office of the Chief of Naval Operations
ORE	Operational Readiness Exam
QDR	Quadrennial Defense Review
SME	Subject Matter Expert
STF	Storage and Transport Frame
STOM	Ship-to-Objective Maneuver
TEMPER	Tent, Extendable, Modular Personnel

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## CHAPTER 1

### INTRODUCTION

#### Introduction and Background

The purpose of this study is to examine the existing Fleet Hospital Program and to explore the possibility of transformation of this program from a platform-based deployable hospital to a modular, capabilities-based hospital.

Since the end of the Cold War, the United States (US) military has shifted from planning for a major war with a known enemy, such as the former Soviet Union, to current operations that support the Global War on Terrorism (GWOT). In the new operational environment, the United States faces a transnational enemy that has caused its military to conduct operations in remote areas of the world with limited resources to support its troops. The US Navy Fleet Hospital Program is responsible for providing health service support ashore, mainly medical and surgical capabilities, to Navy and Marine Corps personnel during intense combat operations. Currently, almost all of the Fleet Hospital Program assets (fleet hospitals) are only available in a 500-bed configuration, with an option to deploy a 116-bed segment. The main issue with the current assets is the size of each and the transportation required to deploy and activate these facilities. For the Navy to provide the prescribed level of medical care to troops in combat and other operations, it must focus on the current and future operational environments and adapt its deployable medical systems to meet the needs of that environment.

The Fleet Hospital Program came into existence, as it is known today, in 1979. The concept of the fleet hospital was that it would fill the gap in the Navy's medical care

matrix between Marine Corps medical companies and Amphibious Task Force medical capabilities and the brick and mortar medical treatment facilities (MTF) both overseas and in the continental United States (CONUS). This was not a new concept for the Navy; fleet hospitals were used in World War II, the Korean War, and in Viet Nam (*Integrated Logistic Support Plan for Fleet Hospital Program* 1983, 1-1). The prototype fleet hospital designed in the late 1970s was a 1,000-bed facility that was build out of a combination of expandable and nonexpandable international standardization organization (ISO) containers, and tent, extendable, modular, personnel (TEMPER) tents. The initial design was extremely large; it required a complete (630 men) Naval Mobile Construction Battalion (NMCB or Seabee Battalion) thirty days to build and covered sixty acres (Williams 2004, 1). Further refinement of the design was directed due to the overall size and extreme time requirements to build this hospital. In 1983, two refined versions of the fleet hospital were developed, a 500-bed communication zone (COMMZ) hospital and a 500-bed combat zone (CBTZ) hospital. The initial COMMZ hospital was designed as a “base hospital” for the European communication zone. It was heavy, provided a high level of care with sophisticated support systems, and could be erected by the hospital staff (doctors, nurses, and hospital corpsman) in five to ten days. The CBTZ hospital was designed to be more mobile with portable utility systems allowing more freedom in choosing activation locations. The hospital staff would erect this version in an estimated 72 hours of equipment arrival at the operational location (Williams 2004, 2-4). These designs became the basis of the Fleet Hospital Program for the next fifteen years. Additionally, a 250-bed CBTZ hospital was designed and produced, with the authorized total of 23 fleet hospitals with 13,250 hospital beds (Triplett 1997, 2).

The purpose of the Fleet Hospital Program is to provide rapidly deployable fleet hospitals to potential trouble areas throughout the globe. This is accomplished by pre-positioning fleet hospitals in strategic locations in the European and Pacific theaters. Fleet Hospital Program assets are considered war reserve material (WRM) and, as such, the fleet hospitals are packed in ISO containers for storage and shipped to pre-position storage sites in the Pacific and European geographic areas. Additionally, fleet hospitals are also deployed with the three Maritime Pre-position Force squadrons based in the Mediterranean, Indian, and Pacific Oceans. The current shelf life of a packed fleet hospital is estimated to be five years. Every five years each fleet hospital must be returned to CONUS and is processed through an integrated logistics overhaul or ILO. Upon completion of the ILO cycle, approximately 12 months, the fleet hospital is redeployed as an asset available to the geographic combatant commanders.

The first deployment of any activated Fleet Hospital Program asset was in August 1990 to Saudi Arabia in support of Operation Desert Shield (ODS). A total of three fleet hospitals were deployed to provide medical care for all deployed forces to the Persian Gulf area. Out of the ODS deployments, valuable lessons learned were compiled and incorporated into future fleet hospital designs. The main change that was integrated into the CBTZ and COMMZ hospital design was the removal of shelf life items (such as pharmaceuticals, rations, and hazardous materials) from the packed hospital. The shelf life items that were unpacked at the hospital activation site had to be disposed of due to material expiration. After ODS, the shelf life items were maintained in CONUS facilities and would be shipped to the hospital for all future activations. Another important lesson

learned was that the estimated 72-hour assembly time was completely inaccurate; the first fleet hospital deployed was fully operational in sixteen days.

In the mid-1990s, after the Cold War, it was determined that there was no need to maintain 23 fleet hospitals (only 17 were actually produced), and the authorized number of fleet hospitals was reduced to ten 500-bed CBTZ hospitals (Triplett 1997, 1). The next major design change occurred in 1997 with the introduction of the 100-bed naval expeditionary medical support system or NEMSS. The NEMSS was a break-out module from the 500-bed hospital and was conceptualized after ODS. Initially, the NEMSS consisted only of the medical core (patient wards, intensive care, operating room, laboratory, and pharmacy) of the hospital. In 1998, the NEMSS was improved, providing the full base operation support (BOS) equipment and was redesignated as the expeditionary medical facility (EMF). With the incorporation of the BOS into the EMF, the assembly time from arrival at the activation site to a fully functional facility increased to an estimated three to five days (*Fleet Hospitals* 2001, 2-9).

The modern and current fleet hospital is still a large and cumbersome facility. When in storage, it is packed in approximately 385 twenty-foot ISO containers and has 128 pieces of civil engineering support equipment (CESE). An activated CBTZ hospital covers 28 acres and requires a staff of 978 personnel to operate the hospital. The assembly time from arrival of equipment at the activation site to full hospital *operations* is set at ten days. The fleet hospital is a more robust facility than the Army and Air Force deployable medical facilities; it is designed for operation as an independent base camp if necessary. A significant problem with the fleet hospital is that it does not have the organic capacity to move itself. Theater lift assets are required to transport the hospital



from its discharge location to its activation site. Additionally, due to lessons learned from ODS, when the hospitals are packed for storage, there are no dated and deteriorative materials packed with the hospital. This material must be shipped forward at activation and significantly increases the size of the hospital by adding approximately 90 twenty-foot ISO containers for a 500-bed hospital.

There have been several deployments of Fleet Hospital Program assets in support of the GWOT. In January 2002, an EMF was deployed to Guantanamo Bay, Cuba, to provide medical care to the detainees held at Camp X-ray. The hospital was erected and ready to receive patients in four days, validating the estimated assembly time. In January 2003, two fleet hospitals were deployed from Maritime Pre-positioning Force (MPF) ships and staged at the port in Kuwait in support of Operation Iraqi Freedom (OIF). The original storage location for the hospitals was Camp Fox, but there were not enough line haul assets available to move the 770 ISO containers to that location. Also in January 2003, an EMF was deployed to Naval Air Station Rota, Spain. This EMF was activated in February 2003, and was the initial communication zone medical facility. Upon commencement of hostilities in March 2003, EMF-3 was forward deployed to southern Iraq. This required a line haul of 80 trucks to move the 160 required containers forward for the establishment of the EMF. An item of interest with this deployment is that EMF-3 was the first Fleet Hospital Program asset to be deployed to a combat zone. Due to the dedicated logistical train required to deploy the first EMF to Iraq, the second EMF deployment to northern Iraq was cancelled. There simply were not enough transportation assets available to move the EMF. This truly emphasizes the need for a modular, capabilities-based hospital.

The most recent Fleet Hospital Program assets to deploy have been the expeditionary medical unit or EMU. The genesis of the EMU came with the GWOT. In early 2002, OPNAV 931 directed the Fleet Hospital Program to develop a level III medical facility that could be rapidly deployed to provide immediate medical care in support of military forces afloat and ashore (Williams 2004, 16). The EMU provides an airmobile, tent-based medical facility with one operating room, radiology, laboratory, pharmacy, and ten intensive care unit (ICU) beds. Two of the four EMUs in existence are currently deployed in support of Operation Enduring Freedom (OEF) and OIF. The first EMU deployment occurred in October 2003 to Camp Lemonier, Djibouti, supporting US forces on the Horn of Africa. The second deployment, an expanded forty-four bed EMU, deployed to Camp Arifjan, Kuwait. Both deployments were to existing base camps and supported the troops assigned to those camps. These EMUs were the first Fleet Hospital Program assets to be deployed via airlift. All equipment and required supplies were packed on Air Force 463L aircraft pallets. The ability to deliver these medical assets via airlift exponentially decreased the deployment time.

The scope of this thesis is to provide research that shows the assets in the Fleet Hospital Program are still holdovers from the Cold War era. These fleet hospitals require conversion to capabilities based hospitals that are capable of interoperability with the other services deployable medical facilities and are scalable to meet the demands of the war fighter. Throughout the history of the Fleet Hospital Program, there are examples of how a large and cumbersome deployable hospital has prevented the Navy from being assigned missions it had the capability to accomplish. The trend reflected in the last few

years and deployments of Fleet Hospital Program assets demonstrate the need for smaller, more capable medical systems.

#### Primary Research Question

This study will address the question, Should the Navy Fleet Hospital Program transform from a platform-based hospital to a modular, capabilities-based hospital?

#### Secondary Questions

In order to address the primary research question, should the Navy Fleet Hospital Program transform from a platform-based hospital to a modular, capabilities-based hospital, the following secondary questions have been developed to assist in answering the primary question:

1. Does the transformation of the Fleet Hospital Program support the Navy's vision statement "Sea Power 21"?
2. Will capabilities-based Fleet Hospitals be compatible and interoperable with other services' deployable medical systems?
3. Will there be a requirement to pre-position capabilities-based Fleet Hospitals in the various overseas locations?
4. Will capabilities-based, modular fleet hospital be deployed on the Maritime Pre-position Force ships as the platform-based fleet hospitals are today?

#### Assumptions

The following assumptions are deemed necessary in order to conduct this research. The assumptions are as follows:

1. The Navy will maintain the Fleet Hospital Program as a viable means of providing medical care to forward deployed troops.

2. The Fleet Hospital Program will continue to maintain pre-position storage locations throughout the globe in support of potential conflicts.

3. The Fleet Hospital Program will continue to play a part in the Maritime Pre-positioning Force program.

### Definition of Key Terms

Due to the unique nature of terms and phrases used throughout the military and across the different service components, the following terms are defined to provide a reference of concepts throughout this study.

Base Operation Support (BOS): Base camp support infrastructure items that includes food service, laundry, public works, supply, troop berthing, and oxygen generation (*Fleet Hospitals* 2001, 2-9).

Bureau of Medicine and Surgery (BUMED): The Bureau of Medicine and Surgery directs the worldwide medical and dental services and facilities maintained by the Department of the Navy. BUMED is responsible for active duty fleet hospital staffing decisions and monitors the training and readiness status of active duty personnel assigned to fleet hospital mobilization billets (*Fleet Hospitals* 2001, 3-2).

Combat Zone (CBTZ) Fleet Hospital: Fleet hospital assets that provide full resuscitation and prompt care of patients in the rear of the combat zone. Representing a secondary level of care in a flow-through mode, the hospital will receive patients from either medical facilities and units organic to the combat forces, which are limited to the basic lifesaving and emergency medical care, or directly from combat (*Integrated Logistic Support Plan for Fleet Hospital Program* 1983, 1-2).

Communication Zone (COMMZ) Fleet Hospital: Fleet hospital assets that provide comprehensive medical care, including acute care or traumatology for combat casualties, convalescence for return-to-duty, and stabilization treatment for personnel requiring medical evacuation (MEDEVAC) to the continental United States (CONUS). The COMMZ hospital will be located in the communication zone, which is a secure area in the rear of the combat theater but outside the combat zone (*Integrated Logistic Support Plan for Fleet Hospital Program* 1983, 1-2).

Civil Engineering Support Equipment (CESE): Equipment that supports base camp operations including automotive vehicles, construction equipment, railway, firefighting vehicles, and generators (NAVFAC P-300 2003, A-1).

Department of Defense Medical Standards Board (DMSB): A joint Department of Defense activity that provides policy and standardization guidance relative to the development of deployable medical systems and medical material used for the delivery of healthcare in the military health service system (DoDD 6000.12 1996, 4).

Deployable Medical Systems: A facility that is capable of being located in a desired or required area of operation during a contingency, war, or national emergency. Deployable medical systems are composed of fixed contingency hospitals and other than fixed contingency hospitals that are not operated during peacetime (DoDD 6000.12 1996, 9).

Expeditionary Medical Facility (EMF): A 116-bed field medical facility providing full resuscitation and emergency wound stabilization surgery of acutely wounded and ill patients. The EMF is a breakout section of the complete fleet hospital and provides the same level of care as the fleet hospital with the exception of dental-oral surgery.

Assembly of this facility requires three-to-five days and eleven acres of clear land (*Fleet Hospitals* 2001, 2-3).

Expeditionary Medical Unit (EMU): A ten-bed field medical facility capable of providing emergency wound stabilization surgery of acutely wounded and ill patients. The EMU is a tent-based hospital designed for air mobility, rapid deployment, and transportability. Assembly of this facility requires one-half of an acre of clear land.

Fleet Hospital: A 500-bed field medical facility providing full resuscitation and emergency wound stabilization surgery of acutely wounded/ill patients in an advanced base environment. Fleet hospitals are modular, rapidly assembled, medical, and surgical shore-based facilities. Assembly of this facility requires 10 days and 28 acres of clear land (*Fleet Hospitals* 2001, 2-3).

Fleet Hospital Program: The Navy program charged with providing comprehensive medical support to the Navy and Fleet Marine Forces engaged in combat operations. Responsible for the policies affecting design, procurement, integration, pre-positioning, modernization, and life cycle support of fleet hospitals (*Fleet Hospitals* 2001, 3-2).

Full-Spectrum Operations: Full-spectrum operations include offensive, defensive, stability and support operations (FM 3-0 2001, 1-15). These operations can be singular or combined to accomplish the mission.

Integrated Logistics Overhaul (ILO): This process is conducted over a twelve-month period and results in the overhaul of fleet hospitals. This process includes the removal of obsolete and damaged material and equipment and implementing technology changes based on the current fleet hospital design.

International Standardization Organization (ISO) Containers: Metal shipping containers with the dimensions of twenty feet long, eight feet wide, and eight feet high. For this purpose, the fleet hospital material is packed and stored in ISO containers.

Maritime Pre-positioning Force (MPF): Military sealift command (MSC) vessels that support the rapid deployment of Marine Corps and Naval forces by providing mobile, long-term storage and supplies near areas of potential conflict.

Medical Treatment Facility (MTF): Medical treatment facilities or MTFs are fixed structure hospitals located throughout the United States and on overseas military installations.

Office of the Chief of Naval Operations (OPNAV 931): The management code on the staff of the Chief of Naval Operations with the responsibility of resource sponsor for the Fleet Hospital Program and provides guidance and direction from the program. OPNAV (N931) is responsible for the monitoring the readiness of all fleet hospitals (*Fleet Hospitals* 2001, 3-1).

Patient Movement Items (PMI): The medical equipment and supplies required to support patients during aeromedical evacuation (JP 1-02 2001a, 403).

Radiology: The branch of medicine that uses ionizing and nonionizing radiation for the diagnosis and treatment of disease. Historically, radiology involved the use of ionizing radiation including X-rays. More recently, radiology has also embraced the use of radioactive isotopes and nonionizing radiation such as ultrasound waves and nuclear magnetic resonance imaging (MedicineNet.com 2005).

Sea Basing: Sea Base serves as the foundation from which offensive and defensive fires are projected making Sea Strike and Sea Shield realities. As enemy access

to weapons of mass destruction grows, and the availability of overseas bases declines, it is compelling both militarily and politically to reduce the vulnerability of US forces through expanded use of secure, mobile, networked sea bases. Sea Base capabilities will include providing joint force commanders with global command and control and extending integrated logistical support to other services. Afloat positioning of these capabilities strengthens force protection and frees airlift-sealift to support missions ashore (NWDC 2004b).

### Limitations

There are several limitations associated with conducting the research for this thesis. This study is being conducted in conjunction with the completion a full curriculum at the US Army Command and General Staff College. The limitations affecting this research are as follows:

1. The research is limited by time.
2. The researcher's limited experience.
3. The availability of resources. The research will be limited to Navy publications, published reports, published articles, lessons learned, research studies, and interviews.
4. The narrow scope for analysis of comparability/interoperability limits the researcher's ability to generalize of the findings of secondary question two.

### Delimitations

The focus of research was not on specific medical capabilities, but was on the broad application of deployable medical systems. The focus involved the transformation of the overall architecture of the current hospital configuration rather than the level of care provided by fleet hospitals.



### Significance

The importance of this topic is that the Navy is responsible for providing medical care to deployed Marine Corps troops (or any service members) beyond the level of the organic medical care imbedded in their units. In this ever-increasing expeditionary operation environment, the Navy needs to truly develop expeditionary, deployable medical systems. This will only be made possible through the transformation of the current expeditionary medical facility in the fleet hospital to a capabilities based hospital that is scalable and capable of being relocated after initial activation. The expeditionary medical unit could be the basic building block for the capabilities based hospital, but further refinement would be required.

### Summary and Conclusions

This research is relevant and timely and should enhance the Fleet Hospital Programs ability to support deployed US Forces involved in full-spectrum operations.

## CHAPTER 2

### REVIEW OF LITERATURE

#### Introduction

The purpose of this study is to examine the existing Fleet Hospital Program and to explore the possibility of transformation of this program from a platform-based deployable hospital to a modular, capabilities-based hospital.

In order to address the primary research question, should the Navy Fleet Hospital Program transform from a platform-based hospital to a modular, capabilities-based hospital? the following secondary questions have been developed to assist in answering the primary question:

1. Does the transformation of the Fleet Hospital Program support the Navy's vision statement "Sea Power 21"?
2. Will capability-based Fleet Hospitals be compatible and interoperable with other services' deployable medical systems?
3. Will there be a requirement to pre-position capabilities-based Fleet Hospitals in the various overseas locations?
4. Will capabilities-based, modular Fleet Hospital be deployed on the Maritime Pre-position Force ships as the platform-based Fleet Hospitals are today?

The purpose of this chapter is to review the current literature that will facilitate the answering of the primary and secondary research questions. Current literature reviewed in this chapter includes national strategy documents; published official documents; Navy tactics, techniques, and procedures (NTTPs); research documents;

professional journal articles; current periodicals; published theses; lessons learned; and personal interviews.

The Department of Defense *Quadrennial Defense Review Report (QDR)* of September 2001 provides the strategy for America's defense in its new security environment through the year 2005. The outlined new strategy is guided by four goals: assuring allies; dissuading adversaries; deterring aggression and coercion; and decisively defeating any adversary if deterrence fails (*QDR* 2001, III-IV). A major departure in this *QDR* from previous reviews is that it emphasizes the need for the Department of Defense to "transform" to meet the needs of its current security environment, specifically stated, "A central objective of the review was to shift the basis of defense planning from a 'threat-based' model that has dominated thinking in the past to a 'capabilities-based' model for the future. This capabilities-based model focuses more on how an adversary might fight rather than specifically whom the adversary might be or where a war might occur" (*QDR* 2001, IV). This requirement to change the national defense focus to a capabilities-based model represents a major shift in the organization of the armed services. During the Cold War, the US was able to focus its military efforts on basically a single threat, the Soviet Union, but in its current environment, its adversaries are relatively unknown so the US must adjust its planning and forces to be able to counter and defeat the capabilities that adversaries might use to fight it. The *Quadrennial Defense Review* also provides new guidance for shaping the armed services. The force of the future will be of a size that can accomplish the following tasks: "Defend the United States; Deter aggression and coercion forward in critical regions; Swiftly defeat aggression in overlapping major conflicts while preserving for the President the option to call for a

decisive victory in one of those conflicts; Conduct a limited number of smaller-scale contingency operations” (*QDR* 2001, 17). This tasking requirement is also referred to as the “1421” construct. This again is a major shift in defense strategy. Previously, the threat-based forces were structured to fight two simultaneous major theater wars (MTW). In order to achieve success in the 1421 construct, the US military must embrace current and future technologies to transform into an integrated and capable joint force. As specified, “To better meet future warfare challenges, DoD must develop the ability to integrate combat organizations with forces capable of responding rapidly to events that occur with little or no warning. These joint forces must be scalable and task-organized into modular units to allow the combatant commanders to draw on the appropriate forces to deter or defeat an adversary. They must be lighter, more lethal and maneuverable, survivable, and more readily deployed and employed in an integrated fashion” (*QDR* 2001, 32). Through these statements, the *QDR* sets the tone for what the transformed US military will become, a more expeditionary force capable of reacting to non-specific “adversaries who use surprise, deception, and asymmetric warfare to achieve their objectives” (*QDR* 2001, 14). In order to achieve this transformation, the Department of Defense must change the way it is organized and how it operates. The *QDR* outlines that the modernization and streamlining of the departments business practices are required to effectively implement the required changes. The final aspect of this defense review is that there is risk associated with everything done in the Department of Defense and that risk management will be essential to implementing the defense strategy outlined in the *QDR*.

Admiral Vern Clark’s “Sea Power 21” is the vision statement for the future of the Navy. This vision outlines three concepts that will maintain the Navy’s operational

effectiveness in the future. These concepts are Sea Strike, Sea Shield, and Sea Basing. Summarized in “Sea Power 21” these concepts are further defined as “Sea Strike is the ability to project precise and persistent offensive power from the sea; Sea Shield extends defensive assurance throughout the world; and Sea Basing enhances operational independence and support for the joint force” (Clark 2002, 3). ForceNet is another concept of “Sea Power 21”; a networked system that will “connect sensors, command and control, platforms, networks, warriors, and weapons” to increase shared information and expedites the speed and accuracy of decisions (Clark 2002, 8). ForceNet will connect Sea Strike, Sea Shield, and Sea Basing increasing situational awareness of naval forces. A Global Concept of Operations, dispersing combat striking power through independent strike groups, including Carrier Strike Groups, Expeditionary Strike Groups, and Surface Action Groups, with the ability to respond with significant capabilities to meet the needs of the Joint Force Commander, will implement the vision of “Sea Power 21” (Clark 2002, 9-10). In order to achieve the implementation of “Sea Power 21,” three additional processes, Sea Trial, Sea Warrior, and Sea Enterprise, have been developed. The first process, Sea Trial, will be led by the numbered fleets and will develop enhanced war fighting capabilities for the fleet by integrating war-gaming, experimentation, and exercises (Clark 2002, 11). The second process, Sea Warrior, will focus on the development and education of sailors. These sailors will receive continual training and professional development to provide an optimally trained crew required to operate the complex systems on the ships of today and in the future. The third process, Sea Enterprise, focuses on “improving organizational alignment, refine requirements, and reinvest savings to buy the platforms and systems needed to transform our Navy” (Clark

2002, 12). The goal of Sea Enterprise is to reduce unnecessary overhead and streamline processes. Another aspect of Sea Enterprise is increased inter-service integration. By combining efforts with the other services, the Navy can reduce expenditures and enhance joint interoperability of systems. Ultimately, the goal of “Sea Power 21” is to “generate maximum combat power from the joint team” (Clark 2002, 13).

The Department of the Navy published the *Naval Transformation Roadmap Power and Access...From the Sea* in 2002. This document is an expansion of Admiral Clark’s vision statement for the Navy “Sea Power 21.” The goal of the transformation roadmap is to describe how the Navy will transform its war fighting capabilities and support the goals outlined in the 2001 *Quadrennial Defense Review*. The roadmap further addresses the operational concepts of Sea Strike, Sea Shield, and Sea Base as well as the processes that will support the transformation concepts. Although these are considered individual concepts, all three are interrelated and mutually dependent on the others for success.

Sea Strike supports offensive power projections through the use of the following transformational capabilities: Persistent Intelligence, Surveillance, and Reconnaissance (ISR); Time Sensitive Strike; Information Operations; and Ship-to-Objective Maneuver (STOM).

Persistent ISR will be accomplished by networking available naval, joint, and national ISR assets to provide a common operational picture to naval forces. Time sensitive strike is linked to persistent ISR by using the information obtained to quickly evaluate threats, obtain targets, and produce “lethal effects” using precision munitions (DON 2002, 11). Information operations will expand the naval offensive capability and

allow naval forces to shape the battlefield. Included in this capability are electronic warfare, computer network defense and attack, and psychological operations (DON 2002, 14). STOM will conceptually deploy forces from the secure sea base directly to their operational objectives. Also, STOM will mainly receive support from the sea base, eliminating the large support bases typically established on the beachhead (DON 2002, 15).

The concept of Sea Shield will use naval assets and the maneuver space of the sea to provide a defensive network to protect the United States and her allies through the capabilities of a theater air and missile defense, littoral sea control, and homeland defense. The theater air and missile defense will provide an in-depth defense and employ networked sensors to provide early warning of attacks and allow for interception of threats to the US and allies. Littoral sea control will assure freedom of maneuver for sea-based forces near land. Naval forces will have to utilize antisubmarine warfare and mine countermeasures to in order to maintain littoral sea control and freedom of maneuver. The previous two capabilities will be used together to enhance homeland defense. By control of the seas and the establishment of a theater air and missile defense network, deployed naval forces can “buy time and space for the detection, tracking, and interdiction of threats to our homeland” (DON 2002, 22).

The concept of Sea Basing “revolutionizes the projection, protection, and sustainment of sovereign war fighting capabilities around the world” (DON 2002, 24). Sea basing capabilities include the accelerated deployment and employment times and enhanced sea-borne positioning of Joint Assets. The sea basing concept will accelerate deployment and employment times by eliminating the need for secure land bases and

ports for the assembly of forces. Force build up will occur at sea, utilizing the maneuver space in international waters, without the requirement of obtaining permission from other nations. Technological improvements, such as high-speed vessels and the next generation of combat logistics ships, will aid in the accelerated timelines. The Sea Basing capability of enhanced sea-borne positioning of joint assets will give joint force commanders “the ability to expand the battlespace beyond enemy reach, moving critical command and control, fire support, logistics, and other assets to the most mobile and secure operation area - the sea” (DON 2002, 25). This capability will provide increased force protection by employing the maneuver space of the sea and will significantly reduce force protection manpower requirements associated with land bases of operations.

As stated previously, the three concepts presented in the roadmap will be interrelated and mutually dependent. FORCEnet is the network that will connect these concepts and allow for their success. FORCEnet will provide improved situational awareness and a common operating picture to deployed naval forces, with its focus on accelerating the decision making process throughout the chain of command” (DON 2002, 26).

In addition to the concepts presented in the roadmap, there are also three processes discussed that are enablers for transformation. These processes are Sea Warrior, Sea Trial, and Sea Enterprise. Sea Warrior focuses on the human dimension of the roadmap. A goal of Sea Warrior is recruiting and retaining quality sailors. This will be accomplished by providing them with quality education and training, and developing new methods of deploying forces without overtaxing the sailors. Sea Trial is the process for integrating new technologies into the force. By using the acquisition method of spiral



development, new technology is delivered to the fleet, with the concept that as these technologies are refined, upgrades will also be delivered to increase effectiveness. Sea Trial is being fleet driven, meaning the new technologies and capabilities are being issued to the fleet for full testing and evaluation. Sea Enterprise is the final enabler for transformation. Sea Enterprise seeks to “improve organizational alignment, refine requirements, harvest efficiencies, and reinvest savings in targeted areas to enhance war fighting effectiveness” (DON 2002, 34). In order to achieve this, the Navy must redefine current business practices and eliminate systems, processes, and platforms that are no longer critical for the Navy to carry out its mission.

The *Concept of Naval Force Health Protection for the 21st Century* provides direction on how Navy medicine plans to develop its health care initiatives for the new security environment. This concept supports the operational war-fighting concepts, such as STOM, Sea-basing, and Expeditionary Maneuver Warfare (EMW). *Naval Force Health Protection for the 21st Century (NFHP-21)* “addresses naval health care across the range of military operations from peacetime to war by maintaining a healthy and fit force, preventing disease and non-battle injuries, and providing casualty care and management” (NWDC 2004a, 1). The concept of *NFHP-21* is built upon three “pillars” or objectives for the future of naval health service support: Healthy and Fit Force, Prevention and Protection, and Casualty Care and Management (NWDC 2004a, 3). Additionally, the foundation for these pillars is the concept of Infrastructure Support Services. The first objective is to achieve a healthy and fit force. This objective seeks to achieve a force with both healthy bodies and minds. This objective is enhanced by the education of the force on health issues, as well as implementing preventative medicine

and wellness programs directed by commanders (NWDC 2004a, 4). The second objective, prevention and protection, relies on preventing casualties from injury or illness. Medical intelligence, training, immunizations, personal protective equipment, and health surveillance are among the measures that will be employed to prevent injury and illness. The third objective of *NFHP-21* is casualty care and management. This objective is comprised of five components, with each component “providing quality, timely casualty care and management of injured and ill forward-deployed naval personnel” (NWDC 2004a, 6). The components are as follows: First Responders, Forward Resuscitative Surgery, Expeditionary Theater Hospitalization, En Route Care, and Care Outside the Theater. These components cover caregivers from the “buddy” providing limited first aid at the point of injury to the brick and mortar medical treatment facilities (MTF) in the continental United States (CONUS) providing comprehensive rehabilitative care.

Infrastructure Support Services, which underlies the three objectives of *NFHP-21*, provides the support base that will enable the others to succeed. It includes modernization of health service support organizations and the rapid introduction of new technology for the improvement of medical capabilities provided to expeditionary forces. This includes the reduction of the logistical footprint currently required to support forces abroad. Additional elements of the infrastructure support services include an aggressive research and development program and training programs that emphasize joint as well as individual Service training (NWDC 2004a, 10-11).

A requirement of *NFHP-21* is that the future naval health services will consist of a collection of capability packages that will be able to provide task-organized health service support for each assigned mission, both afloat and ashore. These packages will be

lighter, scalable, and more mobile than the deployable medical assets of today. These requirements are due to the limited space available for operations that will be mainly supported from the sea base (NWDC 2004a, 3).

The Director, Medical Resources, Plans, and Policy (N-931) Office of the Chief of Naval Operations commissioned the 2002 research memorandum, *Future Deployable Medical Capabilities and Platforms for Navy Medicine*, by the Center for Naval Analysis. This purpose of this research memorandum was to examine potential future deployable medical systems for the years between 2015 and 2025. The memorandum first looks at the current Navy deployable medical systems, hospital ships and fleet hospitals. The study provides historical data for deployments of both platforms across a range of operations including forcible entry, sustained land operations, sustained land combat, and humanitarian assistance operations.

The study examines the current and evolving doctrines of the Navy and Marine Corps as well as the operational environments where future conflicts are expected to occur. This examination yielded results that future conflicts would require both sea-based and land-based medical capabilities. The study further examines both the advantages and disadvantages of possible medical platforms that could be employed to provide the medical capabilities required for future missions between 2015 and 2025. The focus for development of future sea-based medical platforms is on replacing the current hospital ships with reconfigured amphibious ships in today's naval inventory. The main focus is on a hospital variant of the new LPD-17 class ship or reconfiguring the current Whidbey Island class LSD ships (CNA 2002, 29-30). Either of these types of amphibious ship classes would provide a future hospital ship that would have more capabilities than the

current hospital ships, with the exception of the number of patient beds and medical staff. A third alternative would be a medical variant of the experimental catamaran high-speed vessel (HSV) being evaluated by the Marine Corps and as a joint venture between both the Army and Navy. The focus of the land-based medical capability centers on the Maritime Pre-positioning Forces with the 500-bed fleet hospital and the 116-bed EMF (CNA 2002, 30). These capabilities are not new, in fact they are currently what is available today. One disadvantage with these assets is that with the implementation of the future concept of Sea-basing, forces will be assembled at sea and will deploy for missions from the sea. Deployment from the seabase will mean that there will be no secure land area with which to deploy a fleet hospital or an EMF. The capabilities currently provided by these facilities will have to be developed and established for use on the seabase. Another possibility involves using the HSV for a high-speed transport vehicle to deliver the land-based EMF ashore when required. The EMF is considerably smaller than a full fleet hospital, and the HSV can travel at least twice the speed of current ships used to transport these assets.

The research study examines five potential future missions that would require a significant medical capability and analyzes each of the current and future medical platforms for applicability for the mission. The scenarios used for this analysis are operational maneuver from the sea (OMFTS), biological warfare, homeland defense, sustained land operations, and noncombatant evacuation operations (NEO) (CNA 2002, 67). Each of these scenarios is historically based and provides relevant information on how each mission was actually accomplished. The study summarizes this analysis with

charts showing the feasibility of employing each platform type to perform the required mission.

The Department of the Navy publication *navy tactics, techniques, and procedures Fleet Hospitals*, (NTTP) 4-02.4, provides an overview of the assets of the Fleet Hospital Program. This publication is considered to be the Navy's doctrine for fleet hospitals and covers issues relating to all aspects of operations, including command and control (C2), communications, organization, security, logistics, and training. This publication also includes information on the missions, capabilities, and limitations of the fleet hospitals as well as the tactics, techniques, and procedures associated with the deployment and employment of these assets. Included in this publication is the outline of support required from the operational commander for activation of a fleet hospital.

The Department of the Navy publication *Integrated Logistic Support Plan for Fleet Hospital Program* provides an invaluable overview of the development of the Fleet Hospital Program. This publication addresses the different Navy organizations responsible for management of the program. It identifies the requirements of logistics support for the construction, pre-positioning, mobilization, and deployment of the Fleet Hospital Program assets. Additionally, included in this publication are the guidelines for the life cycle management and maintenance requirements of the fleet hospitals.

In the history compilation *A Consolidated History of the Fleet Hospital Support Office*, LCDR George Williams provides an overview of the twenty-five-year history of the command responsible for the design, procurement, storage, and lifecycle management of the fleet hospitals. Included in this history is information on how the Fleet Hospital Program was designed and tested including the first new fleet hospital product in twenty

years, the EMU, the development of the manning requirements for the hospital staff, and overseas warehouse locations and pre-positioning of the fleet hospitals. Also covered is the activation and mobilization of Fleet Hospital Program assets for Operations Desert Shield and Storm (ODS), deployment to Guantanamo Bay, Cuba for the Taliban detainees from Operation Enduring Freedom (OEF), the deployment of two hospitals to Kuwait in support of Operation Iraqi Freedom (OIF), the deployment and activation of two hospitals to Naval Air Station Rota, Spain in support of OIF, the line haul and activation of an EMF from Kuwait to Iraq to support OIF, and the deployment of the first EMU to Camp Lemonier, Djibouti in support of OEF on the Horn of Africa.

In the article “Sea Enterprise Resourcing Tomorrow’s Fleet,” Admiral Michael G. Mullen explains the concepts behind Sea Enterprise, one of the three processes that support the Navy vision “Sea Power 21.” Admiral Mullen explains that the concept of Sea Enterprise “seeks to improve organizational alignment, refine requirements, and reinvest the savings to help us recapitalize and transform the force” (2004, 60). Through Sea Enterprise, the Navy seeks to change the current business practices and create a “culture of continuous improvement, produce better products, and deliver the right force structure for our future” (Mullen 2004, 60). Cost savings are a major point of the Sea Enterprise concept. One aspect of accomplishing cost savings is through increasing interservice integration of systems. Recent joint projects have resulted in increased savings to the Navy and other services as well as increasing the interoperability of Navy systems with the other services. These projects include joint munitions development and joint high-speed vessel experiments with the Army (Mullen 2004, 61). Additional savings will occur by reducing overhead with the elimination of underperforming or unnecessary

products and services (Mullen 2004, 61). Streamlining of organizational structures to create the most efficient organization will also provide opportunities for cost savings. Admiral Mullen states “Opportunities...often lie beyond the boundaries of any single organization, command, unit, or office. For that reason, Sea Enterprise will look across organizations to identify all opportunities” (Mullen 2004, 62). By taking advantage of these opportunities, the Navy will be able to capitalize on significant cost savings and apply those savings to building the future force. In conclusion, Admiral Mullen explains that Sea Enterprise allows the Navy to “identify, devise, and implement the tools that facilitate appropriate levels of risk in our business operations and undertake the types of reforms and restructuring needed to significantly reduce our operating costs” (Mullen 2004, 63).

“Sick & Wounded Forgotten Again?” by Captain Arthur M. Smith addresses the issue of supporting the “sick and injured personnel, as well as civilians and enemy personnel injured during combat operations” while operating from the Sea Basing model (2004, 44). In this article, Smith explains the basic tenants of the Sea Basing concept of operations, providing “independent, mobile, and secure multi-ship floating bases, bound together by modern command and control, communications, and intelligence that can remain at sea for extended periods of time” (2004, 44). He also questions what the capabilities for casualty care will be on the Sea Base. Does the current Sea Basing plan call for a hospital ship to be deployed with each Sea Base task force or will the medical department of the large amphibious ships be required to provide the necessary Health Service Support to the deployed forces. He points out that although there are two extremely capable hospital ships in the Navy inventory today, it is well documented that

these ships are limited by their draft to deep-water anchorages. He also addresses some of the limitations that exist in transporting casualties to those ships. Additionally, Smith points out problems with the treatment facilities on the large-deck multipurpose amphibious assault ships that would be included in the Sea Base flotilla. Although it is advertised that these ships possess the capability to receive large numbers of casualties, they are mostly designed for light casualties and not for injuries associated with combat operations (Smith 2004, 45). Smith also addresses a potential fix to the alleged shortfall in Sea Basing medical care. According to Smith, the Sea Base concept will require a “multitude of smaller, more tactically able afloat medical facilities with the expeditionary strike groups to replace the capabilities of the large hospital ships. They must be complimented by significantly augmented numbers of medical personnel and logistic support packages placed aboard our already overcrowded large amphibious assault ships” (Smith 2004, 46). He also addresses that there is currently no doctrine or peacetime training exercises that support these requirements and capabilities. Smith closes with the statement, “If medical support issues are not included in operational considerations for the Sea Base, this concept will not withstand the shining light of reality once casualties commence their entry across the quarterdeck” (Smith 2004, 47).

“Fleet Hospital Three Makes Navy Medical History in Sands of Southern Iraq” by JOC Al Bloom and Rod Duren provides insight into the first deployment of a Fleet Hospital Program asset into a combat zone. Fleet Hospital Three, a 116-bed Expeditionary Medical Facility (EMF), deployed to Camp Viper, Iraq on 1 April 2003 in support of the Marine Corps First Force Service Support Group (1st FSSG). Fleet Hospital Three was activated to provide stabilization and resuscitative medical care to



coalition forces prior to evacuation to more robust medical facilities outside the area of operations (AO). During its eight weeks in operation in Iraq, Fleet Hospital Three saw more than 600 patients and performed more than 315 surgeries (Bloom 2003, 9).

Included in the patients that received care at Fleet Hospital Three were coalition troops, enemy prisoners of war, and Iraqi civilians.

In his thesis “The Evolution of the Fleet Hospital Program: From the Cold War Era to the Naval Expeditionary Medical Support System,” Joseph Triplett examines the process used to plan and budget for the fleet hospitals. The thesis provides background information on the Fleet Hospital Program, but the main focus is on the changes that occurred to the program after the fall of the Soviet Union. With the end of the Cold War, the requirement was significantly reduced for land-based medical assets needed to support two nearly simultaneous major theater wars (MTW) and to prepare for smaller scale operations other than war (Triplett 1997, 11). Medical assets funded by the Fleet Hospital Program were reduced from 17 to 10 fleet hospitals. This change in the number of fleet hospitals was driven by the need for the Department of Defense (DOD) to downsize. The DOD conducted a study to determine the necessary medical requirements needed for the new threat environment (Triplett 1997, 25). Changes in Marine Corps and Navy doctrine were also being introduced, altering the way that the naval services would fight in future conflicts. To adapt the medical assets to meet this shift in how forces were deployed and would fight, the standard 500-bed fleet hospital evolved in 1997 to include a 116-bed breakout module called the Naval Expeditionary Medical Support System (NEMSS). The NEMSS would allow the geographic combatant commanders the flexibility to deploy smaller medical assets to meet their operational needs (Triplett 1997,

43). The driving force behind this evolution was the lessons learned from the deployments of the three fleet hospitals during Operations Desert Shield and Storm (ODS), the first time that fleet hospital assets were activated and deployed. Triplett also addresses the changes to the manning and training requirements initiated after ODS. Additional changes resulting from ODS was the realignment of the staff supplied to man the fleet hospitals. The reserve fleet hospitals were manned mainly from the same reserve units and, through unit training, had established somewhat of a working relationship. For the active duty hospitals, personnel were assigned from all over the country so when the hospitals were activated, personnel had to adjust to new working conditions and a new “team” at the same time. By aligning the active duty billets for a fleet hospital with a CONUS hospital, relationships established during peacetime could be capitalized upon for a fleet hospital deployment and would provide better support for wartime missions (Triplett 1997, 29). Training also changed as a result of ODS. The goal for deploying trained personnel to activated fleet hospitals was set at 40 percent. The reserve personnel that deployed met this goal, but the active duty deployed less than 20 percent in support of ODS (Triplett 1997, 24). To correct this training deficiency, the training program was overhauled and fleet hospital staffs had to conduct field training for over a nine-day period at the Fleet Hospital Operations and Training Center (FHOTC). Additionally, starting in 1998, an Operation Readiness Evaluation (ORE) was added to the training cycle as a means to measure the readiness of the hospital staffs (Triplett 1997, 32). Commands would not be deemed trained and ready to deploy unless they passed their ORE. In summary, the evolution of the Fleet Hospital Program after the Cold War was the result of changing the training for personnel, a change to how the fleet hospitals were

manned, and a change to the material set of equipment that constitutes a 500-bed fleet hospital, mainly the inclusion of the NEMSS. These changes were the result of a change in the strategic environment and the requirements of the military to support conflicts after the Cold War.

The Naval War College paper *Delivering Forward Surgical Care in the Rapid Force Maneuver Environment: A Challenge to Service Medical Department Innovation and Adaptability*, examines the different Services deployable medical systems designed to support full spectrum operations. Changes in the current strategic environment have demonstrated the need for “lighter, more flexible and integrated surgical assets capable of moving efficiently with highly mobile forces” (Henderson 2003, 2). To achieve the goal of providing a more expeditionary medical support force, LCDR Roy Henderson analyzes the deployable surgical capabilities of the Army, Air Force, and the Navy-Marine Corps team. Although each Service has its own agenda for the development of forward surgical capabilities, the overall goal should be to provide the required surgical capability necessary to support joint forces conducting operations. To facilitate the development of deployable medical systems with the ability to operate in the joint environment, the Joint Readiness Clinical Advisory Board (JRCAB) was established, providing standardization of medical material used by all military services. Although each Service is not required to use all JRCAB standardized medical equipment, the more that each Service uses, the greater interoperability the asset will have with other Service platforms. Henderson also examines specific advantages and disadvantages of each Services forward surgical unit. The bottom line across all Services is that with an increase in mobility and the speed of which units are able to deploy, the cost is a trade-off of

limited self-sustainment capability and an increase on the use external logistical support (Henderson 2003, 10). In conclusion, Henderson states, “The goal in providing forward surgical care in joint RFM is to maximize effectiveness and ensure unity of effort. Services must work together more readily to achieve this goal” (2003, 18). In order to achieve this goal, the services must work together by incorporating DOD standardized new technologies to improve the mobility and interoperability of their deployable medical systems. Services must also improve the training available to personnel assigned to these units. Increased war gaming and participation of these units in exercises will significantly increase their working knowledge of their unit and it will build the unit into a cohesive team capable of providing the highest service possible when called upon to deploy in support troops engaged in combat or with participation in military operations other than war (MOOTW).

## CHAPTER 3

### RESEARCH METHODOLOGY

The purpose of this study is to examine the existing Fleet Hospital Program and to explore the possibility of transformation of this program from a platform-based deployable hospital to a modular, capabilities-based hospital.

In order to address the primary research question, Should the Navy Fleet Hospital Program transform from a platform-based hospital to a modular, capabilities-based hospital? the following secondary questions have been developed to assist in answering the primary question:

1. Does the transformation of the Fleet Hospital Program support the Navy's vision statement "Sea Power 21"?
2. Will capability-based fleet hospitals be compatible and interoperable with other services' deployable medical systems?
3. Will there be a requirement to pre-position capabilities-based fleet hospitals in the various overseas locations?
4. Will capabilities-based, modular fleet hospital be deployed on the Maritime Pre-position Force ships as the platform-based fleet hospitals are today?

The purpose of this chapter is to describe the research methodology used in this study. Both quantitative and qualitative research methods were used in conducting this study. Through the answering of the secondary research questions, the primary research question was also answered. The basis for answering the research questions was an analysis of the literature reviewed in chapter two, through personal experiences and direct

observations conducted while the researcher was assigned to the Fleet Hospital Support Office, a subordinate command of the Fleet Hospital Program Office.

The literature reviewed in chapter two was drawn from varied sources. Several of the articles were extracted from professional journals and current periodicals on file at the Combined Arms Research Library (CARL), Ft. Leavenworth, Kansas. Other information sources were obtained through Internet searches of government websites, specifically the Scientific and Technical Information Network (STINET) research database maintained by the Defense Technical Information Center (DTIC), Ft. Belvoir, Virginia. Research information was also obtained through interviews conducted with personnel from the Fleet Hospital Program Office. Additional research sources are part of the researcher's professional library that has been accumulated over the span of his career.

Chapter 1 of this study introduces the problem, provides some background information, and identifies the importance of the topic today. The primary and secondary research questions were also established in this chapter.

Chapter 2 provides an extensive review of pertinent literature. The review of national strategy documents, current doctrine, background material, and literature from recent publications provides an overview of the necessary information to address the research questions.

Chapter 3 provides the research methodology used in this study. This chapter also provides the criteria for answering the secondary research questions and will follow in subsequent paragraphs.

Chapter 4 will provide the analysis of the research literature and will answer the primary and secondary research questions. It will explain the concept of transformation

and define the current capabilities of the fleet hospital. Chapter 4 will also establish the capabilities of the transformed fleet hospital.

Chapter 5 will provide the conclusions of this research and recommendations for change. It will also provide recommendations for future research and studies related to this topic.

In order to present the utility of a capability-based fleet hospital, the medical scenarios depicted in the Center for Naval Analysis (CNA) study *Future Deployable Medical Capabilities and Platforms for Navy Medicine* will also be used in this study. These scenarios are historically based and represent the potential future missions that a capabilities-based fleet hospital will be required to perform. These scenarios include the following: operational maneuver from the sea (OMFTS), which has since been redesignated as ship-to-objective maneuver (STOM); biological warfare; homeland defense; sustained land operations; and a noncombatant evacuation operation (NEO). The criteria for analysis in these scenarios will be the application of tailored fleet hospital assets to meet the capabilities required for the completion of the mission. In particular, to analyze the ability to provide the required level of medical care to sustain the forces conducting the operations. The decision criteria for these scenarios would simply be whether the addition of selected medical capabilities would enhance the operational success and outcome of the missions. As in the original CNA study, this will be determined by the ability of the fleet hospital to increase the number of intensive care unit (ICU) beds, providing the most definitive care in a level III deployable medical facility, available to support each of the operational scenarios. For each scenario, the CNA established a projected casualty stream for each type of operation. The quantitative

comparison of the required number of ICU beds to the available beds will determine whether the capabilities-based fleet hospital would enhance the operational success of the missions.

In order to answer the secondary research questions, the criteria for answering those questions must first be defined. The criteria for answering secondary question one, Does the transformation of the Fleet Hospital Program support the Navy's vision statement "Sea Power 21"? is derived from the analysis of the guidance established in "Sea Power 21." This guidance has been further refined in the *Naval Transformation Roadmap*, and this study will use the roadmap to evaluate the requirements necessary for the transformation of the Fleet Hospital Program to support the three naval transformational concepts of Sea Strike, Sea Shield, and Sea Basing. For the purpose of this research, the term "support" is used to signify a contribution to successful mission accomplishment for operations considered part of Sea Strike, Sea Shield, and Sea Basing. The researcher developed table 1 to display whether the transformed Fleet Hospital Program will support any of the capabilities defined in the three concepts of "Sea Power 21." The ability of the Fleet Hospital Program to successfully support any of the capabilities defined by the roadmap will indicate support for that particular concept. The determining factor of the transformed Fleet Hospital Program to support the Navy's vision statement of "Sea Power 21" will be the ability of the program to provide support for at least two of the three concepts, Sea Strike, Sea Shield, and Sea Basing.



Table 1. Fleet Hospital Program Support of “Sea Power 21” Capabilities Template		
“Sea Power 21”	Transformed Fleet Hospital Program	
Criteria	Supports	Does Not Support
<u>Sea Strike</u> - Persistent Intelligence, Surveillance, and Reconnaissance (ISR)		
<u>Sea Strike</u> - Time Sensitive Strike		
<u>Sea Strike</u> - Sea-Based Information Operations		
<u>Sea Strike</u> - Ship-to-Objective Maneuver (STOM)		
<u>Sea Shield</u> - Theater Air and Missile Defense		
<u>Sea Shield</u> - Littoral Sea Control		
<u>Sea Shield</u> - Antisubmarine Warfare (ASW)		
<u>Sea Shield</u> - Homeland Defense		
<u>Sea Basing</u> - Compressed Deployment and Employment Times		
<u>Sea Basing</u> - Enhanced Sea-borne Positioning of Joint Assets		

For secondary question two, Will the capabilities-based fleet hospital be compatible and interoperable with other service’s deployable medical systems? the researcher will compare the capabilities-based fleet hospitals compatibility and interoperability with that of other deployable medical systems. The results of the comparison will determine whether the other services’ deployable medical systems are compatible and interoperable with capabilities-based fleet hospitals. For the purpose of this research, the scope of this comparison will be confined to radiology and patient movement items. To assist in the answering of this question, the researcher developed table 2 to display the interoperability results of the comparison of the Services’

deployable medical systems. In order to provide an answer of “yes” for this question, at least two of the three other Services’ deployable medical systems must be compatible and interoperable with the capabilities-based fleet hospital for both radiology and patient movement items. The determining factor to establish interoperability is whether the equipment used in radiology and patient movement is compatible among the Services.

Table 2. Interoperability of Deployable Medical Systems Template		
Deployable Medical System Component	Fleet Hospital	
<b>Radiology</b>	<b>Interoperable</b>	<b>Non-Interoperable</b>
Air Force EMEDS		
Army CSH		
Marine Corps FRSS		
<b>Patient Movement Items</b>		
Air Force EMEDS		
Army CSH		
Marine Corps FRSS		

To address secondary question three and four, the researcher will analyze literature pertaining to the pre-positioning of fleet hospitals, to include deployment on the Maritime Pre-positioning Force (MPF) ships. Analysis will include evaluating the capabilities-based fleet hospitals ability to support the four defense policy goals as outlined in the *Quadrennial Defense Review* report of 2001. The defense goals are as follows: assuring allies and friends; dissuading future military competition; deterring threats and coercion against US interests; and if deterrence fails, decisively defeating any adversary. The pre-positioning of fleet hospitals both in overseas locations and as part of the MPF is directly tied to the defense goals. The forward presence of these extremely capable medical assets will assist in the attainment of these goals by showing both allies

and adversaries that the US is prepared to support combat operations abroad if required. For the purpose of these research questions, the term “support” is used to signify a contribution to the attainment of the defense goals from the pre-positioning of fleet hospitals either overseas or as part of the MPF. To assist in answering these questions, the researcher developed table 3 to show which defense goals each type of pre-positioning location would be able to support. Support for two or more of the defense goals for each research question would provide a “yes” answer for the pre-positioning of the capabilities-based fleet hospitals in various overseas locations and deployment on the MPF ships.

Table 3. Fleet Hospital Pre-position Criteria Template				
Defense Policy Goals	Overseas		MPF	
	Support	Does Not Support	Support	Does Not Support
Assure Allies				
Dissuade Military Competition				
Deter Threats				
Decisively Defeat Any Adversary				

The answers to the four secondary questions will be used as the basis for answering the primary research question. The results of the analysis will answer the secondary questions and based on the answers to the secondary questions the researcher will be able to answer the primary question. If the analysis results in a “No” for all

secondary questions, then the Fleet Hospital Program should not transform to a modular, capabilities-based hospital. If the analysis results in a “Yes” for all secondary questions, then the Fleet Hospital Program should transform to a modular, capabilities-based hospital. If the analysis results in a mix of “Yes” and “No” for the secondary questions, the decision to transform the Fleet Hospital Program will be based on the individual questions. For this study, secondary question one is the most important. If the analysis results in a “Yes” for secondary question one and any other secondary question, then the Fleet Hospital Program should transform to a modular, capabilities-based hospital.

## CHAPTER 4

### ANALYSIS

#### Introduction

The purpose of this study is to examine the existing Fleet Hospital Program and to explore the possibility of transformation of this program from a platform-based deployable hospital to a modular, capabilities-based hospital.

In order to address the primary research question, Should the Navy Fleet Hospital Program transform from a platform-based hospital to a modular, capabilities-based hospital? the following secondary questions have been developed to assist in answering the primary question:

1. Does the transformation of the Fleet Hospital Program support the Navy's vision statement "Sea Power 21"?
2. Will capabilities-based fleet hospitals be compatible and interoperable with other services deployable medical systems?
3. Will there be a requirement to pre-position capabilities-based fleet hospitals in the various overseas locations?
4. Will capabilities-based, modular fleet hospital be deployed on the Maritime Pre-position Force ships as the platform-based fleet hospitals are today?

This chapter will focus on the analysis of the research material to answer the primary and secondary research questions. Prior to answering the questions, the concept of transformation must be understood. Additionally, the capabilities provided by the current Fleet Hospital Program assets as well as the proposed capabilities-based fleet hospitals must be understood. As part of this analysis, this study will incorporate the

proposed capabilities-based fleet hospital into the five potential future operational scenarios used by the Center of Naval Analysis study *Future Deployable Medical Capabilities and Platforms for Navy Medicine*. The results of these scenarios will be used in answering the secondary research questions. The conclusion of this chapter will answer the primary research question.

### Transformation

The requirement for transformation of the Department of Defense was established in the *Quadrennial Defense Review* report of 2001. A main objective of the review was a transitional shift in defense strategy from the Cold War “threat-based” model of the past to a “capability-based” future model (*QDR* 2001, IV). The reason for this shift in defense strategy was a change to the security environment of the United States. The Cold War ended in the early 1990s and the United States emerged as the world’s sole superpower. This new security environment presents an era of uncertainty to the United States, one in which “the United States cannot know with confidence what nation, combination of nations, or non-state actor will pose threats to vital US interests or those of US allies and friends decades from now” (*QDR* 2001, 13). As a result of this new security environment, the United States military must change or transform its focus to “how an adversary might fight rather than who the adversary might be and where a war might occur” (*QDR* 2001, 14). The senior defense leadership recognized that in order to remain relevant in this new security environment, changes would have to be implemented, eliminating the “business as usual” approach to operations for the forces. To achieve the goals established in the new defense strategy, the military and Department of Defense must

transform (*QDR* 2001, 16). The concept of transformation is explained in the *QDR* as follows:

“Transformation results from the exploitation of new approaches to operational concepts and capabilities, the use of old and new technologies, and new forms of organization that more effectively anticipate new or still emerging strategic and operational challenges and opportunities and that render previous methods of conducting war obsolete or subordinate” (*QDR* 2001, 29). Transformation, therefore, is not just the creation of entirely new systems or military forces, but utilizes current systems combined with new technologies to optimize organizations to achieve desired effects with innovative means.

#### Platform-Based Fleet Hospitals

The capabilities of the current Fleet Hospital Program assets must also be understood. The current fleet hospital is platform-based and was designed for sustained land combat operations during the Cold War. The primary mission of the fleet hospital is to provide a flexible combat service support medical facility that supports geographic combatant commanders, joint task force commanders, marine air ground task forces (MAGTAF), naval amphibious task force (ATF) units, and deployed joint forces ashore in an advanced base environment (*Fleet Hospitals* 2001, 2-1). The fleet hospital provides a 500-bed expeditionary level III medical facility for the treatment of combat injuries of Navy, Marine Corps, and joint force personnel. Table 4 summarizes the five levels of healthcare institutionalized within the Department of Defense and provides an example unit or facility for each level. A secondary mission of the fleet hospital is to provide health service support for MOOTW, primarily disaster or humanitarian relief missions.

Table 4. Levels of Care		
Levels	Healthcare	Resources
I	- First Aid - Emergency Care	- Self/Buddy Aid - Battalion/Wing Aid Station - Hospital Corpsmen
II	- Initial Resuscitative	- Shock Trauma Platoon - Surgical Company - Casualty Receiving & Treatment Ship (CRTS)
III	- Restoration of Health	- T-AH (Hospital Ship) - Fleet Hospital
IV	- Definitive	- OCONUS MTF/DTF
V	- Convalescent, Restorative, Rehabilitative	- CONUS MTF/DTF - Veterans Administration - National Disaster Medical System Hospitals

*Source: Fleet Hospitals 2001, 2-2.*

A limitation on the fleet hospital for conducting its secondary mission is that it is designed to provide health service support to military personnel and is not fully equipped to handle disaster or humanitarian relief efforts without additional augmentation and support packages. The current Fleet Hospital Program assets in use today are the 500-bed fleet hospital, the 116-bed EMF, and the 10-bed EMU. The EMF is actually a part of the full fleet hospital. It is designed and packed as a breakout module for providing level III medical care in low-to-medium-intensity conflicts (*Fleet Hospitals 2001, 2-8*). Both the fleet hospital and the EMF are packed and stored in 20-foot ISO containers. The medical core of each hospital is comprised of a combination of TEMPER tents and specially designed expandable-outfitted shelters. Each facility also includes a significant amount of CESE, support equipment necessary for the activation of the hospital and to maintain daily operations. Due to the sheer size of these two medical facilities, the units do not



posses the organic transportation assets to move themselves and they must rely on theater transportation to move the containerized hospitals and CESE from the point of debarkation to the activation site. Once at the activation location, the full fleet hospital has a doctrinal activation time of ten days to be fully operational while the EMF has an activation time of three to five days. The fleet hospital and the EMF also require a significant amount of clear land to establish their full operational capabilities. Table 4 provides a comparison of the array of relative sizes of the current Fleet Hospital Program assets. The EMU is an asset that was conceived and developed as a result of the GWOT. It provides a basic level III medical facility for use in extremely low intensity conflicts. The EMU is both airmobile and rapidly deployable, comprised of a tent based medical core, including a single operating room with supporting clinical capabilities and ten ICU beds. To be an airmobile medical facility, the EMU is not packed in ISO containers, the equipment and material is currently packed and stored in Storage and Transport Frames (STFs). The STF is a storage device used by the Marine Corps and with its incorporation into the EMU, has added significant vertical storage and deployment flexibility for this asset. The packed STF can be stored five deep in ISO containers or can be equipped with protective covers to shield the contents from the elements. STFs will also fit two on an Air Force 463L aircraft pallet, allowing the EMU to be transported on virtually any US military cargo plane. Not all of the EMU equipment will fit into the STFs, specifically the two generators required as support equipment. There are three bulk aircraft pallets included in the pallet total provided in table 5. The fully loaded STFs are also transportable using cargo trucks and may be lifted with common 4K forklifts. A deployed EMU can be completely activated in less than 12 hours and requires less than one half an

acre of land. The rapid activation time is due in part to the replacement of the TEMPER tent with the Base-X expeditionary shelter system for the EMU. This system provides a new tent that is man portable and can be set up by four personnel in ten minutes or less. The addition of this system to the EMU has produced significant savings on the manpower required for activation and reduced the time required to be fully operational once the EMU is at the activation location.

Table 5. Relative Sizes of Fleet Hospital Program Assets			
	500-bed Fleet Hospital	Expeditionary Medical Facility	Expeditionary Medical Unit
Containers	385	102	7(17)*
Sustainment Containers (30 DOS)	90	30	0
Civil Engineering Support Equipment Pieces	132	72	2
Activation Space Required (Acres)	28	11	.31
Beds Provided			
Intensive Care	80	20	4
Intermediate Care	420	96	6
Staff Required	978	277	38

*Source:* Data from Fleet Hospital Support Office, 2004.

\*EMU is packed in Storage and Transport Frames (STFs) loaded on seventeen Air Force 463L pallets. The equivalent container count required for storage is seven.

The fleet hospital and the EMF are designed using the advanced base functional component (ABFC) concept. The ABFC concept for the fleet hospital design includes the personnel, facilities, equipment, and material to perform the Navy medical mission ashore and includes almost all the required resources for the performance of assigned

missions (*Fleet Hospitals* 2001, 2-3). Both the fleet hospital and EMF possess extremely robust capabilities, and with the support of theater potable water and fuel sources, both of these assets could function as independent base camps. Table 6 lists the specific medical capabilities and nonmedical support functions that are organic to both the fleet hospital and EMF. The EMU is designed to provide basic level III medical care in support of deployed personnel. It is intended for utilization within an existing base camp and lacks the non-medical support functions that are integrated into the fleet hospital and EMF. The EMU does possess the ability to provide its own electrical power generation and distribution, but like the fleet hospital and EMF, requires theater support for both fuel and potable water.

Table 6. Fleet Hospital Medical and Support Functional Areas	
Medical Capabilities	Nonmedical Support Functions
<ul style="list-style-type: none"> <li>• Casualty Receiving and Treatment</li> <li>• Surgical Suite</li> <li>• Laboratories</li> <li>• Intensive Care Unit</li> <li>• Radiology</li> <li>• Wards</li> <li>• Pharmacy</li> <li>• Operation Room Preparation and Holding</li> <li>• Operating Room</li> <li>• Oral Surgery/Dentistry</li> <li>• Support Central Sterile Reprocessing</li> <li>• Blood Bank</li> <li>• Medical Repair</li> <li>• Preventative Medicine</li> </ul>	<ul style="list-style-type: none"> <li>• Communications &amp; Information Management</li> <li>• Weapons Storage</li> <li>• Electrical Power Generation and Distribution</li> <li>• Potable Water Distribution</li> <li>• Sewage Collection</li> <li>• Fuel Storage and Distribution</li> <li>• Supply</li> <li>• Food Service</li> <li>• Public Works Maintenance</li> <li>• Public Works Transportation</li> <li>• Laundry</li> <li>• Chaplain Services</li> <li>• Barber Shop</li> <li>• Staff Berthing</li> <li>• Administration</li> </ul>

Source: *Fleet Hospitals* 2001, 2-3.

### Capabilities-Based Fleet Hospitals

The proposed capabilities-based fleet hospital is one that uses many of the components of the current hospital combined with technological advances and a reconfigured packing method to produce a scalable level III medical facility that is capable of meeting and supporting the operational needs of the war-fighter. This requirement to transform current forces to meet the demands of the new security environment was outlined in the *QDR* as follows:

To better meet future warfare challenges, DoD must develop the ability to integrate combat organizations with forces capable of responding rapidly to events that occur with little or no warning. These joint forces must be scalable and task-organized into modular units to allow the combatant commanders to draw on the appropriate forces to deter or defeat an adversary. They must be lighter, more lethal and maneuverable, survivable, and more readily deployed and employed in an integrated fashion. (*QDR* 2001, 32)

Although the fleet hospital is not a lethal asset, it is a force multiplier with the ability to return injured combat personnel back to duty status. *Naval Force Health Protection for the 21st Century (NFHP-21)* specifically calls for the transformation of Navy medical assets. *NFHP-21* states, “All aspects of Navy and Marine Corps health service support will be developed as capability packages to maximize their effectiveness and efficiency in operation environments with limited shore-based health support and space constraints inherent in sea-based operations” (NWDC 2004a, 3). The transformational shift from the platform-based hospital of the Cold War to a capabilities-based hospital will require a change to the doctrine of how these medical facilities are employed. The current assets of the Fleet Hospital Program are designed and designated for employment ashore in support of forces engaged in combat operations. In order to

meet the demands of the war-fighter, the future fleet hospital needs to have the capability of deployment both ashore and at sea (Lippert 2005). This capability would provide enhanced medical care afloat for the future naval concept of Sea Basing as well as in support of the OMFTS concept, STOM. Modules from the fleet hospitals could be utilized to augment the organic medical facilities onboard amphibious ships and the Maritime Pre-position Force ships that would be an integral part of the vessels that will constitute the Sea Base. This concept of utilization of the fleet hospital modules both ashore and afloat is further

The integration of new technology into the capabilities-based fleet hospital will also improve mobility and the modularity of the hospitals. As new medical technologies are developed, they will be integrated into the fleet hospital. The creation of smaller, more efficient medical equipment will allow the fleet hospital to increase its mobility through the reduction of weight and cube. Additional space savings will be generated from new multipurpose medical equipment, such as the new style of defibrators that track patient vital signs. The addition of this new equipment will not only decrease weight and cube, but will also increase the hospitals modularity. Medical planners will be able to task organize the fleet hospital to meet the specific medical needs of the war fighter and deploy a facility with current medical technology.

The design of the capabilities-based fleet hospital would be based on the EMU and would include all of the medical capabilities and support functions of the current hospital as listed in table 6. The implementation of the capabilities-based fleet hospital would eliminate the need for separate assets based on their size. Each fleet hospital would contain the components that enable scalable hospitals to be constructed, allowing sizes

from the EMU to the EMF and the full 500-bed facility or any size in between. The size of each facility would be directly related to the capabilities needed to support the war fighter. A major deviation from the current program would be overhauling the architectural framework of the hospital. The current hospital configuration consists of TEMPER tents and specially designed outfitted shelters. The basic structure utilized in the transformed hospital would be same the Base-X tent system currently employed in the EMU. Utilizing a tent-based architecture for the hospital would provide increased mobility and flexibility for deployment as well as the ability to relocate the facility on the battlefield. One of the most significant problems created by the current fleet hospital configuration is that all the material except for the CESE is containerized, requiring heavy lifting equipment to deploy and activate the hospital. The reduction or elimination of the outfitted shelters, specifically the BOS containers, from the new hospital design would significantly reduce bulk and weight. The outfitted shelters currently in the hospitals would still be required to support long term deployments ashore, but could be maintained as a centralized inventory to be deployed as augmentation material sets on an as needed basis. Through the reduction of containers and outfitted shelters, mobility would be improved and the required deployment time would be reduced for these capable medical facilities.

A second area for major change from the existing program would be the packing method for storage and deployment. In order to achieve modularity and scalability, a completely new packing method would have to be implemented. Equipment is currently packed by functional area into large wooden crates and boxes that allows for easier loading of material into the containers for storage. An important lesson learned from

Fleet Hospital Three during OIF was that these crates and boxes were destroyed or discarded during activation, creating the significant problem of having no available packing material when it was time to retrograde the hospital at the end of its mission. The use of STFs for packing would serve multiple purposes. Primarily, the STF would allow the modules of the hospital to be airmobile. STFs would also reduce the need for large wooden crates as secondary packing material, eliminating excess weight from the hospital. Another use for the STFs would be as a storage racks or shelving units after hospital activation. The adjustable shelves built in STFs would allow the capabilities-based fleet hospital to be packed in modules that are airmobile. The challenge in this method of packing is to identify all the required equipment for a specific functional area and to pack that material achieving the smallest footprint possible. Similar equipment would be packed together. The maximum number of equipment sets that could be packed and fill an STF would be established as the baseline available in an individual module. For example, if an STF would hold four complete sets of equipment necessary to set up an ICU bed, the baseline ICU module would be identified as having 4 complete equipment sets. This level of packing detail would allow medical planners to identify their requirements and task organize the capabilities-based fleet hospitals to meet specific mission requirements, basically the ability to scale the hospital to meet the anticipated medical requirements of each mission. This packing scheme would have to be developed for every area of the capabilities-based fleet hospital to achieve the modularity required to support the missions of today's security environment.

## Operational Scenarios

To analyze the utility of a transformed fleet hospital, the researcher applied the capabilities discussed previously to the five potential future operational scenarios used by the Center of Naval Analysis study *Future Deployable Medical Capabilities and Platforms for Navy Medicine*. In each of the scenarios, a projected casualty stream was developed to display the usefulness of each of the proposed future deployable medical systems used in the study (CNA 2002, 67). The fleet hospitals used as part of the study were the current platform-based hospitals that exist today (500-bed fleet hospital and EMF, there was no EMU at the time of the study). The quantitative evaluation for suitability of medical platforms of this study was the required number of ICU beds available to the medical departments for use in each scenario. The scenarios are based on historical missions, projects and exercises, and likely future missions. The scenarios represented include the following: OMFTS; biological warfare; homeland defense; sustained land operations; and NEO operations.

The first scenario represents a forcible entry operation, STOM, where Marines deployed as part of an ATF move directly to their objective without initially establishing a land operations and support base. For this scenario, medical care would be provided to patients by the organic medical departments on amphibious ships (a minimum of six amphibious ships would be used in this type of scenario) and by the two current hospital ships, with a total of 210 ICU beds provided in theater. Based on the projected casualty stream for this type of operation, there would be a significant shortage of ICU beds available over a nine-day period, with the highest deficiency being 116 beds on day two of the operation (CNA 2002, 69). In the original study, the utilization of either the fleet



hospital or the EMF was considered tactically impossible due to the amount of secure land and the time required for assembly (CNA 2002, 71). The introduction of a modular capability-based fleet hospital into this scenario would allow for a significant change to the projected deficiency of ICU beds. The medical planners using the projected casualty stream for this operation would be able to forecast the shortfall of medical capabilities required to support the combat force. Table 7 provides a general summary of the medical capabilities organic to the current Navy amphibious classes of ships. With the identification of the shortfall of ICU beds, planners would be able select the modules containing the required fleet hospital material necessary to augment the medical departments on the amphibious ships taking place in the operation. The staging of packed medical equipment on the amphibious ships would be accomplished prior to the start of the operation. Space to establish the additional ICU bed requirement would be made available with the forward movement of equipment necessary to conduct operations ashore. The close proximity of the medical department spaces on amphibious ships to the well deck and vehicle storage areas significantly increases the utility of establishing additional ICU wards in those spaces. The tents used to house the ICU wards would be the same kinds that are used in an EMU. Each tent is 18 by 25 feet, and is capable of housing between 8 to 10 ICU beds. Each of the six amphibious ships has the capacity to erect at least two tent wards, increasing the overall ICU bed count by 96 to 120 beds. This increase would effectively negate any projected bed deficiency from the casualty stream. Additionally, after the first few days of the operation, modules containing additional medical material could be delivered to a secure forward area for the establishment of a level III medical facility on the shore. This facility would serve two

purposes. First, it would decrease the transit time required for wounded personnel to receive medical treatment. Second, it would provide an additional medical holding facility for noncritical patients, easing the requirements for the shipboard facilities. Based on the requirements for conducting this operation, a single capabilities-based fleet hospital would be able to provide the equipment and material required for this type of operation to be a success.

Table 7. Medical Capabilities of Amphibious Ships						
<b>Capability / Ship Class</b>	<b>LHA-1</b>	<b>LHD-1</b>	<b>LPD-4</b>	<b>LPD-17</b>	<b>LSD-41</b>	<b>LSD-49</b>
Operating Rooms	4	6	1	2	1	1
Post-operative recovery / Intensive Care Beds	17	18	0	0	1	1
Isolation Ward Beds	4	6	4	4	2	2
Primary Care Ward Beds	48	36	8	24	5	5
Ship's Doctor	Yes	Yes	Yes	Yes	Yes	Yes
Ship's Dentist	Yes	Yes	Yes	Yes	Yes	Yes

*Source:* Data from MCRP 3-31B, 2001.

The second scenario builds a biological warfare attack into the operation being conducted in the first scenario. In this attack, an infantry battalion is infected with anthrax on D+2 day. Based on the incubation period, additional casualties from the biological attack begin to increase on day four with the peak requirement for additional ICU beds of 135 (244 total) on day seven (CNA 2002, 75). Conclusions for the biological attack in the original study indicated the need to increase the number ICU beds available on ships. As in the first scenario, both the fleet hospital and EMF were not considered feasible for supporting this situation. An additional finding was the need to be able to segregate and

isolate contagious patients aboard deployable medical platforms (CNA 2002, 75). Table 7 identifies that the largest isolation ward currently available on an amphibious ship is six-beds. The additional ICU wards established in the first scenario could also be used as isolation wards when treating biologically contaminated patients. Each tent system is equipped with an internal plenum system and can be connected to individual heating, ventilation, and air conditioning (HVAC) units equipped with high efficiency particulate air (HEPA) filters. These units have the ability to provide both positive and negative ventilation airflow. Through the use of negative ventilation with HEPA filtration systems, the spread of contaminants from infected patients would be minimized. Furthermore, shore medical facilities established in secure forward areas, as in scenario one, would also provide effective protection during a biological attack. Through the use of positive ventilation airflow in the medical facilities provided by the HVAC system, contaminants would be prevented from entering the facility. The patients and staff remaining inside the facility would be protected from outside contamination. Additional modules from the hospital could also be deployed forward for utilization as decontamination facilities for exposed troops. The utility of a modular, capabilities-based fleet hospital is shown again by providing additional medical capability for use in a biological attack scenario with the establishment of isolation wards for contaminated patients. However, due to space constraints on ships, it would not be able to resolve the shortage of ICU beds unless a larger patient holding facility was established ashore.

The third scenario utilized in the study involves an operation supporting homeland defense. In this scenario, a bombing in New York produces 1,000 trauma casualties. The scenario also establishes that there is a lack of hospital capacity available

creating the need for additional trauma capability to be brought to New York immediately. There would be no casualty stream in this scenario since all casualties are created simultaneously (CNA 2002, 76). The original study concluded that for homeland defense the fleet hospital is inadequate due to the 10-day setup time required and that the EMF would also be too slow because of the minimum 48-hour setup time requirement (CNA 2002, 76). These findings should be considered adequate based on the current platform-based fleet hospital, but a capabilities-based hospital would be able to provide assistance in minimal time. With a modular packing method allowing for air transportation, equipment critical for treating the trauma patients associated with this scenario could be transported from a CONUS storage location to either an Air Force or Navy airfield in less than two hours. The required equipment could be on the ground in less than 12 hours, allowing for fleet hospital assets to provide augmenting medical care to health care facilities in the New York area in less than 24 hours. Due to the capabilities present in the transformed fleet hospitals, one asset could provide numerous medical facilities dispersed to locations throughout the city. The design of the hospitals employed for this scenario would also allow expansion of the facilities over time if required. Based on this scenario, the capabilities-based fleet hospital would be able to provide assistance in a homeland defense operation involving trauma casualties.

The fourth scenario presented in the study is the conduction of sustained land operations, such as Operation Desert Storm. During that conflict, there were three fleet hospitals deployed and activated to support coalition forces. The projected casualty stream for this scenario is based upon the actual statistics recorded during the operation. Table 8 provides a summary of the statistics from ODS. To understand the differences in

the figures presented in table 3 it must be noted that Fleet Hospital Five was functional for six months, including during the troop buildup phase, while Fleet Hospitals Six and Fifteen were operational for only two months. The great success achieved by Fleet Hospital Five was due in part to its close proximity of where the ground troops were stationed during the buildup (CNA 2002, 79). The original study concluded that although the fleet hospitals provided significant medical capability to the coalition forces conducting combat operations, the fleet hospital was not capable of following the ground forces once combat commenced (CNA 2002, 79). A capabilities-based fleet hospital in this scenario would also achieve overwhelming success. An added feature with the utilization of the capabilities-based hospital would be the ability to task organize the hospital to provide the required medical support during the force buildup phase and retain the flexibility to move selected elements forward to support combat operations. The maneuverability and task organization inherent to the capabilities-based fleet hospital would only increase the mission success while supporting sustained land operations.

Table 8. Medical Statistics for Navy fleet Hospitals in Operation Desert Storm				
	Fleet Hospital Five	Fleet Hospital Six	Fleet Hospital Fifteen	Total
Inpatients	4,347	201	697	5,245
Outpatient visits	28,942	2,340	8,101	35,383
Surgeries	584	23	239	846
Patient evacuations (out)	1,501	122	417	2,040

*Source:* Data from CNA 2002, 78.

The fifth scenario is a NEO operation and is based on the evacuation of United States embassy personnel from Mogadishu, Somalia, in 1991. In the scenario, Marine Corps helicopters are dispatched from two Navy amphibious ships to evacuate the personnel from the embassy for a short-fused mission that covered only four days from the ambassador's request for evacuation until the evacuation was complete. During a two-day period, a total of 281 personnel from 32 countries were evacuated from Mogadishu (CNA 2002, 81-82). Although the actual operation was a success without any significant incidents, the study found that if there had been any significant casualties among the evacuees, there would have been no means of treating them while en route to the ships (CNA 2002, 83). The study also found that because of the nature of this operation, utilization of a fleet hospital or an EMF would not be tactically possible. The only future medical platform remotely capable of being used to support this operation was the HSV ambulatory care ship (CNA 2002, 84). Utilizing the medical capabilities of amphibious ships presented in table 7, any significant number of casualties would have overwhelmed the medical department's ability to treat patients. Although the capabilities-based fleet hospital could provide task organized medical assets, as outlined in the STOM scenario discussed previously, to augment the organic medical departments of either the amphibious ships or the HSV, NEO operations are naturally time constrained. The short fused requirements of these operations would prevent the pre-positioning of such assets aboard the ships. Only in cases where the medical modules were already loaded on the ships would the capabilities-based fleet hospital be able to provide medical care for the support of NEO operations.

### Research Questions

Secondary question one. Does the transformation of the Fleet Hospital Program support the Navy's vision statement "Sea Power 21"? To answer this question, the future concepts outlined in "Sea Power 21" must be understood. The future of the Navy presented in this vision statement focuses on the three transformational concepts of Sea Strike, Sea Shield, and Sea Basing.

Sea Strike is the first concept of "Sea Power 21." Sea Strike entails the "ability to project precise and persistent offensive power from the sea" (Clark 2002, 3). The capabilities associated with the Sea Strike concept are persistent intelligence, surveillance, and reconnaissance (ISR), time sensitive strike, information operations, and STOM (DON 2002, 2). Although the fleet hospital does not provide any offensive or strike capability, deployable medical facilities are a force multiplier with the ability to return injured and wounded personnel back to duty status. The capabilities-based fleet hospital would not provide any additional value to persistent ISR, time sensitive strike, or to information operations. The Sea Strike capability that the fleet hospital would be able to support is STOM. STOM call for the projection of combined arms forces from ships at sea directly against operational objectives without the initial establishment of a secure beachhead for logistics support (DON 2002, 15). As identified previously in the future mission operational scenarios one and two, the capabilities-based fleet hospital would provide support in a forcible entry operation through the augmentation of afloat medical departments on amphibious ships. Additional support could also be generated by deploying task organized level III medical facilities ashore, providing enhanced life-saving procedures in support of the level I and II capable units organic to Marine and

joint force combat units. The capability to selectively split future fleet hospitals will be critical in a STOM operation. Time is of the utmost importance in treating medical casualties, and the fleet hospital will be able to provide forward medical treatment within the critical “golden hour” (the first hour in which an injury is received) either afloat or ashore. Through the ability of the fleet hospital to support the STOM mission, it is able to support the concept of Sea Strike.

Sea Shield is the second concept of “Sea Power 21” and provides the Navy the ability to “provide defensive assurance throughout the world” (Clark 2002, 3). The capabilities inherent to the Sea Shield concept are theater air and missile defense, littoral sea control, and homeland defense (DON 2002, 3). As with Sea Strike, the benefit of the transformed Fleet Hospital Program does not apply to all the capabilities of Sea Shield. The only area that would be enhanced is that of homeland defense. The capabilities-based fleet hospital would be able to support homeland defense missions where level III medical care is needed. Due to the fleet hospitals ability to move via surface or air transportation means, deployment from CONUS storage sites to areas of crisis could be quickly achieved. The future mission operational scenario three from the CNA study presented a homeland defense mission of mass trauma casualties. In this situation, the capabilities-based fleet hospital would be able to respond in a timely manner and render assistance where needed. Although the operational scenario was limited to mass trauma casualties, the capabilities of the fleet hospital presented in scenario two could also apply to a homeland defense mission. One of the greatest fears faced in the current security environment is that of a biological attack occurring in the United States. The fleet hospital would be an invaluable asset in this situation, as this facility has the ability to



establish a significant number of isolation ward beds that could be used in support of civilian hospitals. Based on need, the fleet hospital would be task organized and deployed to support the medical needs of civil authorities in a homeland defense crisis situation. Based on the ability of the capabilities-based fleet hospital to support missions of homeland defense, the transformed Fleet Hospital Program is able to support the concept of Sea Shield.

Sea Basing is the third concept of “Sea Power 21.” Sea Basing centers on the utilization of the uninhibited maneuver space of international waters to “provide sustainable global projection of American power” (DON 2002, 4). Within the concept of Sea Basing, the logistics base supporting troops conducting combat operations will mainly be supplied from the protected Sea Base, reducing the requirement to build-up the logistics infrastructure ashore. By reducing the logistics footprint ashore, the requirement for force protection assets will also be reduced. The capabilities provided by Sea Basing are: accelerated deployment and employment time; and enhanced sea-borne positioning of joint assets (DON 2002, 4). These concepts will be achieved through the integration of combatant and auxiliary naval forces into a “single force” capable of conducting expeditionary warfare from the sea (DON 2002, 24). The integration of new naval technologies, including the high-speed vessel, will allow the sea-based force to rapidly assemble and conduct combat operations with the majority of their supporting and sustainment logistics being delivered from the sea. The Sea Basing force will be comprised of amphibious ships, combatant ships, and naval auxiliary ships (including the maritime pre-position force future (MPF (F)) ships) (DON 2002, 24). One area of concern with Sea Basing is the medical capability that will be present to support combat

forces. Current medical facilities onboard amphibious ships, identified in table 2, are mostly suited for light casualties (Smith 2004, 45). This is an area that the transformed fleet hospital would be able to provide the medical support needed for Sea Basing operations. As previously identified in operational scenario one, fleet hospital equipment and material could be deployed to augment the medical departments on amphibious ships and upgrade the medical department capability from level II to level III care. The establishment of level III medical care afloat would reduce the logistical footprint ashore, fulfilling one of the major objectives of the Sea Basing concept. Another area of concern with regard to medical care in Sea Basing is that without the large hospital ships, numerous smaller, more capable medical facilities would be required afloat to provide the required medical care during combat operations (Smith 2004, 46). Once again, a transformed Fleet Hospital Program would prove useful in addressing this concern. A single capabilities-based fleet hospital would be able to provide the medical equipment necessary to establish level III medical facilities across an Expeditionary Strike Group (ESG) or, depending on the size, a Sea Basing force. Additional questions arise about what level of medical capability will be built into the MPF (F) ships. The same equipment utilized to augment the amphibious ships could also be employed on the MPF ships that, along with the amphibious ships, comprise the future Sea Basing force. Although the design is not currently finalized, the future MPF ships could be equipped with relatively modest medical department spaces, but maintain the flexibility to expand those spaces with fleet hospital equipment during combat or times of crisis. This would enable the MPF ships to provide state of the art medical care without having to invest in organic medical department equipment. (A substantial cost savings would also be

generated by not having to replace shipboard medical equipment whenever new medical technologies are developed.) Multipurpose spaces on the ships could simply be converted to medical spaces when needed (Lippert 2004). The staging of fleet hospitals assets pre-positioned on MPF ships in close vicinity to those spaces would add to the ease in which the spaces were converted and would also reduce the time to establish the required medical facilities.

Table 9. Fleet Hospital Program Support of “Sea Power 21” Capabilities		
Sea Power 21	Supports	
Criteria	Supports	Does Not Support
<u>Sea Strike</u> - Persistent Intelligence, Surveillance, and Reconnaissance (ISR)		X
<u>Sea Strike</u> - Time Sensitive Strike		X
<u>Sea Strike</u> - Sea Based Information Operations		X
<u>Sea Strike</u> - Ship to Objective Maneuver (STOM)	X	
<u>Sea Shield</u> - Theater Air and Missile Defense		X
<u>Sea Shield</u> - Littoral Sea Control		X
<u>Sea Shield</u> - Anti-Submarine Warfare (ASW)		X
<u>Sea Shield</u> - Homeland Defense	X	
<u>Sea Basing</u> - Compressed Deployment and Employment Times	X	
<u>Sea Basing</u> - Enhanced Sea-borne Positioning of Joint Assets	X	

As demonstrated in the preceding paragraphs and table 9, the transformed Fleet Hospital Program does support the Navy’s vision statement “Sea Power 21.” The

capabilities-based fleet hospital is capable of supporting operations associated with the three operational concepts included in “Sea Power 21.” Although the fleet hospital does not support each capability identified for Sea Strike and Sea Shield, it can still support at least one of the capabilities of those concepts and therefore supports “Sea Power 21.”

Secondary question two. Will capabilities-based fleet hospitals be compatible and interoperable with other services deployable medical systems? To determine the interoperability of deployable medical systems, those systems must first be understood. Secondly, examination of the different Service’s deployable medical systems will determine if the capabilities-based fleet hospital will be interoperable with those systems. Figure 1 provides a breakdown of the different Service deployable medical systems in relation to the level of care provided by each system.

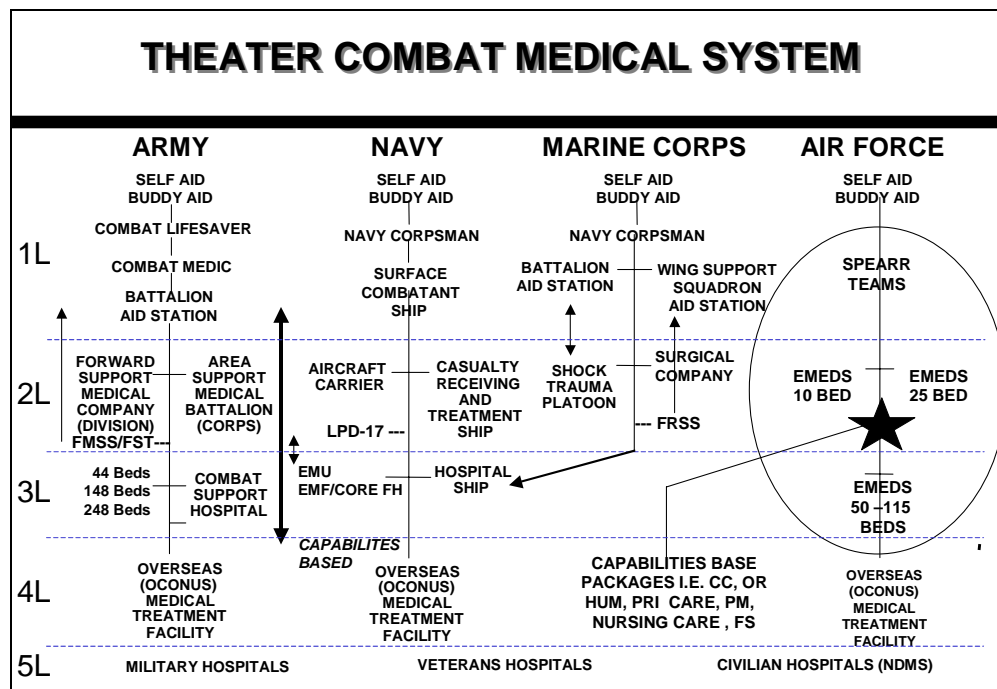


Figure 1. Theater Combat Medical Systems  
Source: Fleet Hospital Support Office Command Brief 2004.

Deployable medical systems are designed and deployed to provide varied levels of care in an area of operations during a contingency, war, or national emergency (*Fleet Hospitals* 2001, 2-4). Each Service maintains deployable medical systems to support the distinct missions the Service is required to perform. The current security environment dictates that future operations will be more “joint” in nature. To achieve success in the joint environment, the standardization of common components used in the deployable medical systems is being established by a quad-service group, the JRCAB (*Fleet Hospitals* 2001, 2-4). The component selection is based upon a common database used by the four military Services. The database consists of approximately 440 patient conditions, the tasks required to treat each condition for each level of care, and the personnel and material required to perform each task (*Fleet Hospitals* 2001, 2-4). This joint database allows the JRCAB to provide guidance to the Services for standardization of medical equipment across systems. The mission of the JRCAB is as follows “JRCAB serves as an executive-level body responsible to support the DoD medical readiness by enhancing Service medical department cooperation, interoperability, and operational flexibility, while achieving efficient health service support and conservation of resources. JRCAB is chartered to convene and guide joint service Subject Matter Experts (SME) panels in the process of developing and maintaining jointly recommended medical material for in-theater care” (JRCAB 2002, 7). Although each service is not required to use all JRCAB standardized medical equipment, the more that each Service uses, the greater interoperability the asset will have with the other Service deployable medical systems.

To determine whether the capabilities-based fleet hospital will be interoperable with the other Service deployable medical systems, an examination of equipment

contained in those systems must be conducted. Although the JRCAB sets the stage for interoperability among the deployable medical systems, based on current mission requirements the Services do not have adopt the JRCAB standardized common medical components. The systems examined to determine interoperability for this research are the Marine Corps forward resuscitative surgical system (FRSS), the Army's combat support hospital (CSH), and the Air Force expeditionary medical system (EMEDS). It must be noted, however, that it is beyond the scope of this research to identify all areas of interoperability between the Services deployable medical systems. For the purpose of this research, the focus will be on the areas of radiology and patient movement items.

The radiology assets used in the capabilities-based fleet hospital consist of the most current medical technology present today. The three types of radiology equipment being used are a portable ultrasound system, a portable computerized digital x-ray, and a containerized digital x-ray. A portable ultrasound system is currently used in radiology by all Services. The portable computerized digital x-ray is currently used by all Services except the Marine Corps. The FRSS does not currently have x-ray capability and the ultrasound is its only radiological piece of equipment (JRCAB 2003, 5). The containerized digital x-ray was procured for the fleet hospital along with identical units for the Army's CSH (Lippert 2005). Although there is no standardization requirement to utilize digital radiography, each service has adopted the use of these systems. These systems allow the hospitals to copy x-ray images to a CD that is readable on virtually any computer. This creates the added benefit of allowing patient x-rays to travel with each patient when transported to facilities with a higher level of care, reducing the patient wait time to receive the necessary care. The benefit of having the same equipment in the

deployable medical systems of all the services is that if needed, these facilities can be collocated during combat operations to provide a more robust medical capability than each unit alone. The commonality of these systems across the Services also streamlines the logistical support chain.

The patient movement items have also been standardized across the Services, increasing the interoperability of these systems. Patient movement items range from low-technology stretchers and litters to sophisticated monitoring equipment and defibrulators. The commonality of this equipment allows for an exchange when patients are evacuated from lower to higher levels of care, regardless of which service is providing the medical care. Patients can be evacuated from a FRSS to a CSH, from an EMEDS to a fleet hospital, or any combination of these facilities. The most difficult items to transfer from one medical facility to another, due to accountability, are the cardiac monitoring devices. Each service has implemented the JRCAB approved multifunction monitor for patient evacuation. These systems combine an electrocardiograph, pulse oximeter, and blood pressure monitor into one module, eliminating the need for separate pieces of equipment (JRCAB 2003, 5). To aide in the transfer of patient movement item, these devices have been standardized across level II and level III facilities. Additionally, the design of these devices also includes their use for conducting aeromedical evacuation without causing interference to aircraft. This is an important feature that allows rapid transfer of patients between medical facilities without having to swap equipment based on the mode of evacuation transportation.

As table 10 shows, the capabilities-based fleet hospital will most likely be compatible and interoperable with other services' deployable medical systems, at

Table 10. Interoperability of Deployable Medical Systems		
Component	Fleet Hospital	
<b>Radiology</b>	<b>Interoperable</b>	<b>Non-Interoperable</b>
Air Force EMEDS	X	
Army CSH	X	
Marine Corps FRSS	X	
<b>Patient Movement Items</b>		
Air Force EMEDS	X	
Army CSH	X	
Marine Corps FRSS	X	

least in radiology and patient movement items. The commonality of medical equipment across the Services deployable medical systems reinforces the interoperability of these assets. By integrating equipment used by all the services, the opportunity to employ joint medical facilities is increased. The ability to deploy interoperable medical facilities increases the options available to geographic combatant commanders to provide support during combat operations (Henderson 2003, 9)

Secondary question three. Will there be a requirement to pre-position capabilities-based fleet hospitals in various overseas locations? The findings as displayed in table 11 indicate that there will be such a requirement. The transformation of the Fleet Hospital Program from a platform-based to a capabilities-based hospital will not change the current pre-position requirements. The fleet hospitals provide a significant medical capability to geographic combatant commanders for the development of operational plans (OPLANS) and contingencies that occur in their area of operations (Lippert 2005). The pre-positioning of fleet hospitals in various overseas locations not only shortens the deployment distance when operations require the activation of a fleet hospital, but the hospitals pre-positioned in allied countries support the defense policy goals of the United



States. Figure 2 provides a general overview of the various overseas pre-position sites as well as the operating areas of the MPF squadrons.

Table 11. Fleet Hospital Pre-position Criteria				
Defense Policy Goals	Overseas		MPF	
	Support	Does Not Support	Support	Does Not Support
Assure Allies	X		X	
Dissuade Military Competition		X		X
Deter Threats		X	X	
Decisively Defeat Any Adversary	X		X	

Although the capabilities-based fleet hospital provides a modular, task organized, and air-mobile medical facility capable of being deployed around the world, the need to pre-position these extremely capable assets overseas still exists. Through the presence of these assets in allied countries, the United States is able to fulfill the defense policy goals of “assuring allies and friends.” “The presence of American forces overseas is one of the most profound symbols of the U.S. commitment to allies and friends” (*QDR* 2001, 11). These assets stored in allied countries, send a message of the commitment of the United States to its allies by the pre-positioning of these hospitals in strategic locations to support the defense of the interest of the United States and the sovereignty of its allies. The presence of the fleet hospital implies, that if needed, the US is willing to commit combat forces to ensure stability in the region and the defense of its allies. The pre-

# Fleet Hospital Pre-position Locations

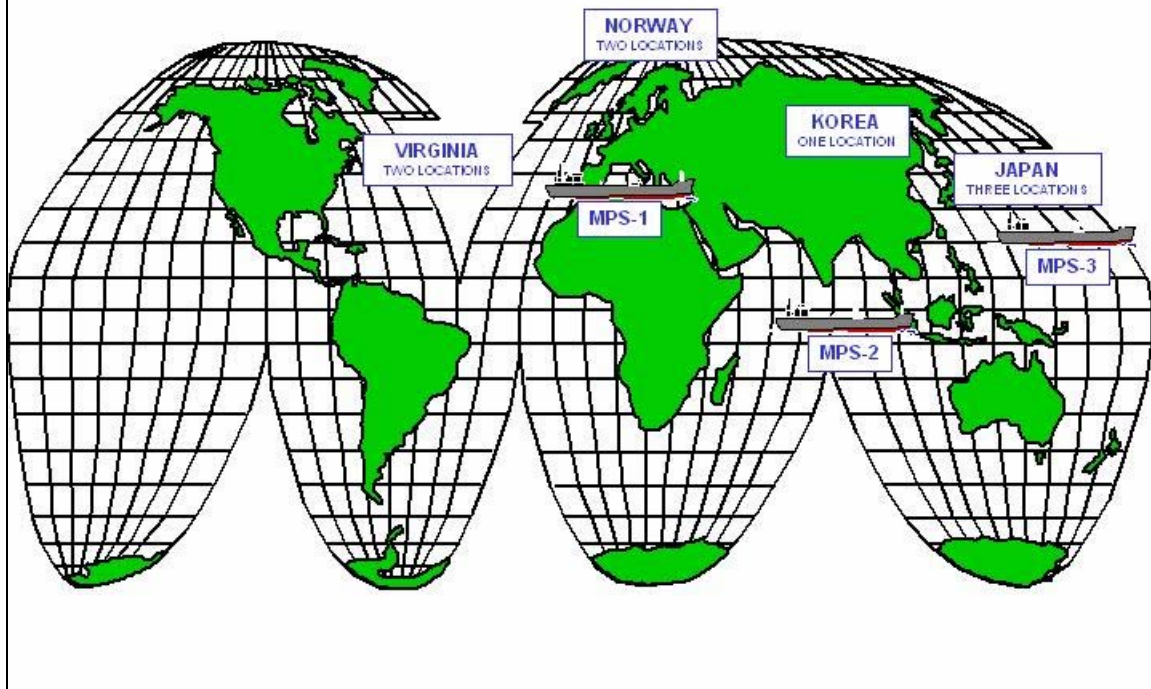


Figure 2. Fleet Hospital Pre-position Locations

Source: Fleet Hospital Support Office Command Brief, 2004.

positioning of fleet hospitals also supports the defense policy goal “if deterrence fails, decisively defeat any adversary.” Fleet hospitals pre-positioned overseas provide the combatant commanders with an extremely capable medical facility for development of their operation plans (*Fleet Hospitals* 2001, 3-1). These medical facilities are capable of providing level III care to joint forces conducting combat operations. Although the fleet hospital is not an offensive force, it is a force multiplier, capable of returning injured and wounded personnel to duty status. The presence of a fleet hospital in support of combat forces will compliment a decisive defeat of any adversary by providing enhanced medical

care for the survival of Navy and Marine Corps personnel as well as any other joint force personnel.

Secondary question four. Will capabilities-based fleet hospitals be deployed on the Maritime Pre-position Force (MPF) ships as the platform-based fleet hospitals are today? The requirement for fleet hospitals to be deployed on the MPF ships stems from the Navy's requirement to provide level III health service support to Navy and Marine Corps deployed forces conducting combat operations. The findings as displayed in table 11 indicate that the requirement for Navy medicine to support Marines and sailors in combat will not change in the future. A capabilities-based fleet hospital will provide the same level of care as the platform-based hospitals, but it will be able to be task organized and its size scaled to meet the demands of the assigned mission (Lippert 2005). MPF ships will also be a component force of the Sea Basing concept. The fleet hospitals deployed on the MPF ships could play a key role in providing level III medical care afloat during operations conducted from the sea. Fleet hospitals deployed on MPF ships will also support the DoD defense policy goals.

There are currently three Marine Corps MPF squadrons and each squadron is responsible for supporting operations in their assigned geographic region (the Mediterranean Sea squadron supporting the European Command AO, the Indian Ocean squadron supporting the Central Command AO, and the Western Pacific squadron supporting the Pacific Command AO). Figure 2 illustrates the assigned operational areas for each MPF squadron. The MPF squadrons act as mobile pre-position sites for Navy and Marine Corps material and are capable of supporting a Marine Expeditionary Brigade (MEB) sized unit with its pre-positioned equipment. The fleet hospital is assigned to each

MPF squadron to provide the medical support for the MEB that can be deployed from the ships. The pre-positioning of the fleet hospital with Marine Corps equipment on the MPF ships increases the flexibility for deployment and significantly decreases the deployment timeline in the event that a fleet hospital is required to support combat operations or military operations other than war. The forward presence of the MPF squadrons supports the defense policy goal of assuring allies and friends. The assignment of MPF squadrons to specific regions demonstrates the resolve of the United States for support of stability and peace in those regions.

The MPF ships provide the United States with the capability to project both combat and stability forces ashore. This capability supports the defense policy goals: “deterring threats and coercion against US interests”; and “if deterrence fails, decisively defeating any adversary.” The ability to project a MEB sized force ashore from the unrestricted maneuver space of international waters provides the president with a tool for deterring aggression abroad. The MEB not only includes combat forces, but sustainment forces as well. By the very nature of the MPF ships, the forward presence to deter aggression can be shifted to virtually any critical area of the world accessible by the ocean. The inclusion of the fleet hospital on the MPF ships provides the combatant commanders with the required medical capabilities for conducting combat operations ashore to decisively defeat any adversary. The ability to task organize the modular capabilities-based fleet hospital will allow the combatant commander to maximize the support provided to combat forces. The fleet hospital is a force multiplier, capable of returning injured and wounded personnel to duty status and the presence of a fleet hospital in support of combat forces will compliment a decisive defeat of any adversary

by providing enhanced medical care for the survival of Navy and Marine Corps personnel as well as any other joint force personnel.

An example of where the utility of a capabilities-based fleet hospital deployed on MPF ships would have proven extremely useful is the force build-up just prior to OIF. The original OPLAN called for the deployment of two EMF sized facilities. In order to accomplish this, two MPF squadrons were discharged in Kuwait and the fleet hospitals were staged for deployment to support combat operations in Iraq (Williams 2004, 18). The footprint of these hospitals included over 800 ISO containers. When it came time to deploy, the scarcity of theater transportation assets allowed for only one hospital deployment. Had the capabilities-based fleet hospital been deployed as part of the MPF, the mission could have been accomplished by one hospital. A single hospital would have provided the planners the required medical capability to support the Marine Corps and joint forces in conducting combat operations. The modular nature of the capabilities-based fleet hospital would significantly reduce the amount of material required to move forward for the establishment of the two independent hospitals. Additionally, the second hospital could have been transported via intratheater air assets due to the lack of ground transportation. The deployment options that the modular, capabilities-based fleet hospital provides further reinforces the idea that this asset will be deployed on MPF ships as the platform-based fleet hospitals are deployed today.

Through the answering the secondary research questions above, the primary research question, should the Navy Fleet Hospital Program transform from a platform-based hospital to a modular, capabilities-based hospital, can now be answered. This study has demonstrated that a transformed Fleet Hospital Program will support the Navy's

vision statement “Sea Power 21.” The capabilities-based fleet hospital will support STOM operations conducted as part of the Sea Strike concept. The transformed Fleet Hospital Program will also support homeland defense missions where medical capabilities are required as part of the concept Sea Shield. In support of Sea Basing, the capabilities-based fleet hospital will be able to provide level III medical facilities afloat through the augmentation of medical departments currently onboard ships as well as establishing new facilities onboard the MPF future ships. This study has also demonstrated that the capabilities-based fleet hospital will be interoperable with other Services deployable medical systems. Through the process of joint standardization of procedures and equipment, the fleet hospital will be able to provide support during combat operations either independently or collocated with other medical facilities. There will also be a requirement to pre-position capabilities-based fleet hospitals in various overseas locations as well as on MPF ships. The pre-positioning of the capabilities-based fleet hospitals both overseas and afloat as part of the MPF provides DOD with a means of supporting the defense policy goal of “assuring allies and friends.” The forward presence of these extremely capable medical facilities emphasizes the commitment of the United States to her allies. Additionally, the fleet hospital will provide DOD with a means of supporting the goal of “decisively defeating any adversary.” The inclusion of fleet hospitals with combat forces, as with Fleet Hospital Three during OIF, provides a combat multiplier by returning ill or injured personnel back to duty status. The forward presence of a fleet hospital during combat operations also puts deployed forces somewhat at ease, knowing that if needed, there will be adequate medical care close at hand.

The answer to each secondary question was “yes”; therefore, according to the decision criteria discussed in chapter 3, the results indicates that the Navy Fleet Hospital Program should transform from a platform-based hospital to a modular, capabilities-based hospital. The uncertain future of the current security environment of the United States requires that the DOD Services transform to be able to provide the capability to react to how an adversary might fight rather than based on who the adversary might be (*QDR* 2001, 14). This transformation of the fleet hospital is required to ensure that proper medical care will be provided both ashore and afloat to Navy and Marine Corps personnel, as well as other joint forces, deployed in support of combat operations. The ability to task organize a medical facility based on mission from a modular hospital will allow the geographic combatant commanders the ability to provide the required level of support during combat operations or while conducting MOOTW operations.

## CHAPTER 5

### CONCLUSION AND RECOMMENDATIONS

#### Introduction

The purpose of this study is to examine the existing Fleet Hospital Program and to explore the possibility of transformation of this program from a platform-based deployable hospital to a modular, capabilities-based hospital.

In order to address the primary research question, should the Navy Fleet Hospital Program transform from a platform-based hospital to a modular, capabilities-based hospital, the following secondary questions have been developed to assist in answering the primary question:

1. Does the transformation of the Fleet Hospital Program support the Navy's vision statement "Sea Power 21"?
2. Will capabilities-based fleet hospitals be compatible and interoperable with other services' deployable medical systems?
3. Will there be a requirement to pre-position capabilities-based fleet hospitals in the various overseas locations?
4. Will capabilities-based, modular fleet hospital be deployed on the Maritime Pre-position Force ships as the platform-based fleet hospitals are today?

Through the analysis of information and answering of the secondary research questions, the primary research question was answered. The Navy Fleet Hospital Program should transform from a platform-based hospital to a modular, capabilities-based hospital. The need to transform is based on lessons learned from the recent



deployments of fleet hospitals in support of OIF and from the projected future operations that the fleet hospital will be required to support.

History has a way of repeating itself. The NEMSS (predecessor of the EMF) was developed as a direct result of the lessons learned from ODS. The fleet hospital was simply too large and difficult to move and deploy. The NEMSS was designed to provide combatant commanders with a more maneuverable and smaller fleet hospital that was capable of providing level III care to support the needs of an operation (Triplett 1997, 42-43). Today, from the OIF lessons learned, the Fleet Hospital Program is experiencing déjà vu. The 1990's solution for an expeditionary, maneuverable, smaller fleet hospital was proven to be too large and still not expeditionary enough to be effective in supporting fast moving combat operations. The Fleet Hospital Program must transform from the platform-based hospital of the Cold War to a modular, capabilities-based hospital that is able to support US military operations conducted in remote areas of the world with limited resources to support its troops. The ability to task organize a deployable medical system to meet this need is critical to supporting future operations across the dispersed battlefield.

It is recommended that the Fleet Hospital Program begin design and development of the capabilities-based fleet hospital. As stated previously, the EMU could serve as the basic building block for developing this new hospital. The ability to task organize from the EMU has already been tested and proven successful. The deployment of EMF-44 to Camp Arifjan, Kuwait, in June of 2004 provides an example of a task organized fleet hospital. Figure 3 provides an aerial view of the EMF-44. The core of this facility was an EMU that was expanded by adding additional Base-X tents to increase the hospital ward

space. The overall patient holding capacity was increased from 10 to 44. An expandable shelter operating room with two operating tables and a hard shelter laboratory were also added to the EMF-44 to increase the durability of the facility, due to the extended deployment timeframe. Additional tents were also utilized for administrative spaces and a supply storeroom. This combination tent and shelter fleet hospital was task organized and established to provide the medical support for the deployed joint force personnel at Camp Arifjan. The challenge for the Fleet Hospital Program is to expand this concept to a full 500-bed fleet hospital. The implementation of a modular packing scheme would allow the task organization of the fleet hospital and would provide the geographic combatant commander's medical planners the ability to scale hospitals to meet operational requirements in remote areas and across dispersed battlefields.



Figure 3. Expeditionary Medical Facility Forty-Four, August 2004, Camp Arifjan, Kuwait  
*Source:* Fleet Hospital Support Office Command Brief, 2004.

### Recommendations for Future Studies

This research paper has focused on the need of the Fleet Hospital Program to transform from a platform-based hospital to a modular, capabilities-based hospital. Although the research has shown that there are significant changes that can be made to enhance the program, there are still many areas of the Navy's deployable medical systems that could be investigated and researched to improve the medical care provided to Sailors, Marines, and other joint personnel conducting combat operations or deployed in support of other contingencies. Future research areas related to this topic could include the following:

1. Consolidation of the different components that constitute the Fleet Hospital Program (material sets, manpower, and training) under one organization within the Navy's Bureau of Medicine, with the responsibility of complete program oversight of all areas concerning fleet hospitals.
2. Examining the current storage locations of pre-positioned war-reserve medical assets and evaluate potential new locations based on the current security environment.
3. Developing and implementing an expeditionary medicine database to be used by medical planners in organizing the required capabilities to meet the operational needs of the joint force.
4. The feasibility of developing a single joint deployable medical system to be used in future contingencies and operations.
5. Consolidation of the individual Service medical communities under a joint umbrella, creating a single medical service that provides care to the entire joint force.

6. The interoperability of US military deployable medical systems with those of allies and coalition partners.

Although this list is not all encompassing of additional study topics, it does provide several areas for future thought and research.

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